

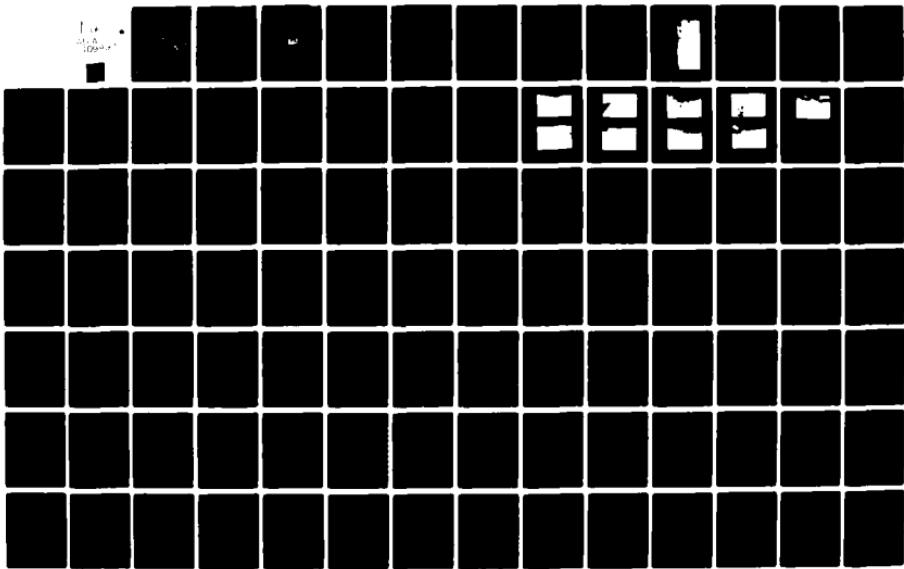
AD-A109 897

NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/6 13/13
NATIONAL DAM SAFETY PROGRAM, WILLIAM H. LUEHMANN RECREATION PON--ETC(U)
SEP 81 G KOCH

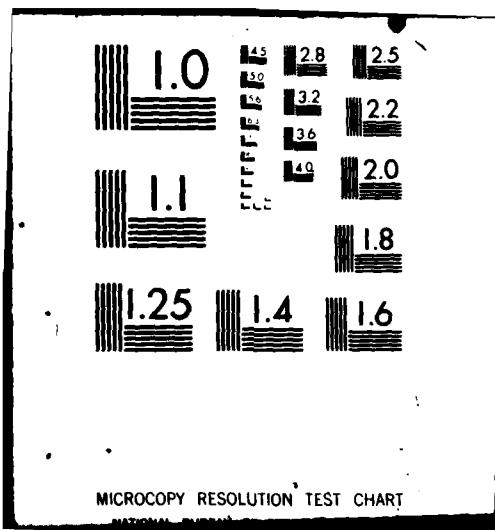
DACW51-79-C-0001

NL

UNCLASSIFIED



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
8010
8011
8012
8013
8014
8015
8016
8017
8018
8019
8020
8021
8022
8023
8024
8025
8026
8027
8028
8029
8030
8031
8032
8033
8034
8035
8036
8037
8038
8039
8040
8041
8042
8043
8044
8045
8046
8047
8048
8049
8050
8051
8052
8053
8054
8055
8056
8057
8058
8059
8060
8061
8062
8063
8064
8065
8066
8067
8068
8069
8070
8071
8072
8073
8074
8075
8076
8077
8078
8079
8080
8081
8082
8083
8084
8085
8086
8087
8088
8089
8090
8091
8092
8093
8094
8095
8096
8097
8098
8099
80100
80101
80102
80103
80104
80105
80106
80107
80108
80109
80110
80111
80112
80113
80114
80115
80116
80117
80118
80119
80120
80121
80122
80123
80124
80125
80126
80127
80128
80129
80130
80131
80132
80133
80134
80135
80136
80137
80138
80139
80140
80141
80142
80143
80144
80145
80146
80147
80148
80149
80150
80151
80152
80153
80154
80155
80156
80157
80158
80159
80160
80161
80162
80163
80164
80165
80166
80167
80168
80169
80170
80171
80172
80173
80174
80175
80176
80177
80178
80179
80180
80181
80182
80183
80184
80185
80186
80187
80188
80189
80190
80191
80192
80193
80194
80195
80196
80197
80198
80199
80200
80201
80202
80203
80204
80205
80206
80207
80208
80209
80210
80211
80212
80213
80214
80215
80216
80217
80218
80219
80220
80221
80222
80223
80224
80225
80226
80227
80228
80229
80230
80231
80232
80233
80234
80235
80236
80237
80238
80239
80240
80241
80242
80243
80244
80245
80246
80247
80248
80249
80250
80251
80252
80253
80254
80255
80256
80257
80258
80259
80260
80261
80262
80263
80264
80265
80266
80267
80268
80269
80270
80271
80272
80273
80274
80275
80276
80277
80278
80279
80280
80281
80282
80283
80284
80285
80286
80287
80288
80289
80290
80291
80292
80293
80294
80295
80296
80297
80298
80299
80300
80301
80302
80303
80304
80305
80306
80307
80308
80309
80310
80311
80312
80313
80314
80315
80316
80317
80318
80319
80320
80321
80322
80323
80324
80325
80326
80327
80328
80329
80330
80331
80332
80333
80334
80335
80336
80337
80338
80339
80340
80341
80342
80343
80344
80345
80346
80347
80348
80349
80350
80351
80352
80353
80354
80355
80356
80357
80358
80359
80360
80361
80362
80363
80364
80365
80366
80367
80368
80369
80370
80371
80372
80373
80374
80375
80376
80377
80378
80379
80380
80381
80382
80383
80384
80385
80386
80387
80388
80389
80390
80391
80392
80393
80394
80395
80396
80397
80398
80399
80400
80401
80402
80403
80404
80405
80406
80407
80408
80409
80410
80411
80412
80413
80414
80415
80416
80417
80418
80419
80420
80421
80422
80423
80424
80425
80426
80427
80428
80429
80430
80431
80432
80433
80434
80435
80436
80437
80438
80439
80440
80441
80442
80443
80444
80445
80446
80447
80448
80449
80450
80451
80452
80453
80454
80455
80456
80457
80458
80459
80460
80461
80462
80463
80464
80465
80466
80467
80468
80469
80470
80471
80472
80473
80474
80475
80476
80477
80478
80479
80480
80481
80482
80483
80484
80485
80486
80487
80488
80489
80490
80491
80492
80493
80494
80495
80496
80497
80498
80499
80500
80501
80502
80503
80504
80505
80506
80507
80508
80509
80510
80511
80512
80513
80514
80515
80516
80517
80518
80519
80520
80521
80522
80523
80524
80525
80526
80527
80528
80529
80530
80531
80532
80533
80534
80535
80536
80537
80538
80539
80540
80541
80542
80543
80544
80545
80546
80547
80548
80549
80550
80551
80552
80553
80554
80555
80556
80557
80558
80559
80560
80561
80562
80563
80564
80565
80566
80567
80568
80569
80570
80571
80572
80573
80574
80575
80576
80577
80578
80579
80580
80581
80582
80583
80584
80585
80586
80587
80588
80589
80590
80591
80592
80593
80594
80595
80596
80597
80598
80599
80600
80601
80602
80603
80604
80605
80606
80607
80608
80609
80610
80611
80612
80613
80614
80615
80616
80617
80618
80619
80620
80621
80622
80623
80624
80625
80626
80627
80628
80629
80630
80631
80632
80633
80634
80635
80636
80637
80638
80639
80640
80641
80642
80643
80644
80645
80646
80647
80648
80649
80650
80651
80652
80653
80654
80655
80656
80657
80658
80659
80660
80661
80662
80663
80664
80665
80666
80667
80668
80669
80670
80671
80672
80673
80674
80675
80676
80677
80678
80679
80680
80681
80682
80683
80684
80685
80686
80687
80688
80689
80690
80691
80692
80693
80694
80695
80696
80697
80698
80699
80700
80701
80702
80703
80704
80705
80706
80707
80708
80709
80710
80711
80712
80713
80714
80715
80716
80717
80718
80719
80720
80721
80722
80723
80724
80725
80726
80727
80728
80729
80730
80731
80732
80733
80734
80735
80736
80737
80738
80739
80740
80741
80742
80743
80744
80745
80746
80747
80748
80749
80750
80751
80752
80753
80754
80755
80756
80757
80758
80759
80760
80761
80762
80763
80764
80765
80766
80767
80768
80769
80770
80771
80772
80773
80774
80775
80776
80777
80778
80779
80780
80781
80782
80783
80784
80785
80786
80787
80788
80789
80790
80791
80792
80793
80794
80795
80796
80797
80798
80799
80800
80801
80802
80803
80804
80805
80806
80807
80808
80809
80810
80811
80812
80813
80814
80815
80816
80817
80818
80819
80820
80821
80822
80823
80824
80825
80826
80827
80828
80829
80830
80831
80832
80833
80834
80835
80836
80837
80838
80839
80840
80841
80842
80843
80844
80845
80846
80847
80848
80849
80850
80851
80852
80853
80854
80855
80856
80857
80858
80859
80860
80861
80862
80863
80864
80865
80866
80867
80868
80869
80870
80871
80872
80873
80874
80875
80876
80877
80878
80879
80880
80881
80882
80883
80884
80885
80886
80887
80888
80889
80890
80891
80892
80893
80894
80895
80896
80897
80898
80899
80900
80901
80902
80903
80904
80905
80906
80907
80908
80909
80910
80911
80912
80913
80914
80915
80916
80917
80918
80919
80920
80921
80922
80923
80924
80925
80926
80927
80928
80929
80930
80931
80932
80933
80934
80935
80936
80937
80938
80939
80940
80941
80942
80943
80944
80945
80946
80947
80948
80949
80950
80951
80952
80953
80954
80955
80956
80957
80958
80959
80960
80961
80962
80963
80964
80965
80966
80967
80968
80969
80970
80971
80972
80973
80974
80975
80976
80977
80978
80979
80980
80981
80982
80983
80984
80985
80986
80987
80988
80989
80990
80991
80992
80993
80994
80995
80996
80997
80998
80999
801000
801001
801002
801003
801004
801005
801006
801007
801008
801009
801010
801011
801012
801013
801014
801015
801016
801017
801018
801019
801020
801021
801022
801023
801024
801025
801026
801027
801028
801029
801030
801031
801032
801033
801034
801035
801036
801037
801038
801039
801040
801041
801042
801043
801044
801045
801046
801047
801048
801049
801050
801051
801052
801053
801054
801055
801056
801057
801058
801059
801060
801061
801062
801063
801064
801065
801066
801067
801068
801069
801070
801071
801072
801073
801074
801075
801076
801077
801078
801079
801080
801081
801082
801083
801084
801085
801086
801087
801088
801089
801090
801091
801092
801093
801094
801095
801096
801097
801098
801099
801100
801101
801102
801103
801104
801105
801106
801107
801108
801109
801110
801111
801112
801113
801114
801115
801116
801117
801118
801119
801120
801121
801122
801123
801124
801125
801126
801127
801128
801129
801130
801131
801132
801133
801134
801135
801136
801137
801138
801139
801140
801141
801142
801143
801144
801145
801146
801147
801148
801149
801150
8011



100807
ADA100807

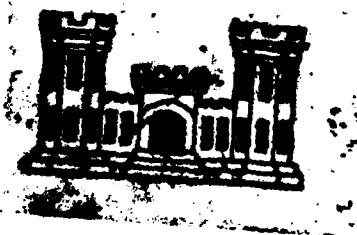
REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOMT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Phase I Inspection Report .. Wm. H. Luchmann R EC Pond Dam Delaware River Basin, Delaware County, NY Inventory No. NY01199		7 5. TYPE OF REPORT & PERIOD COVERED Phase I Inspection Report National Dam Safety Program
6. AUTHOR(s) GEORGE KOCH		6. PERFORMING ORG. REPORT NUMBER DADMW51-79-C-0001
9. PERFORMING ORGANIZATION NAME AND ADDRESS New York State Department of Environmental Conservation 50 Wolf Road Albany, New York 12233		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army 26 Federal Plaza New York District, GofE New York, New York 10287		12. REPORT DATE 14 September 1981
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Department of the Army 26 Federal Plaza New York District, GofE New York, NY 10287		13. NUMBER OF PAGES UNCLASSIFIED
16. DISTRIBUTION STATEMENT (of this Report) LEVEL		15. SECURITY CLASS. (of this report) UNCLASSIFIED
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		16. DECLASSIFICATION/DOWNGRADING SCHEDULE S JAN 22 1982
18. SUPPLEMENTARY NOTES Original contains color plates: All DTIC reprodu- ctions will be in black and white		
19. KEY WORDS (Continued on reverse side if necessary and identify by block number) Dam Safety National Dam Safety Program Visual Inspection Hydrology, Structural Stability		William H. Luchmann R EC Pond Dam Delaware County, NY Delaware River Basin
20. ABSTRACT (Continued on reverse side if necessary and identify by block number) This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.		
21. The examination of documents and the visual inspection of William H. Luchmann Dam did not reveal conditions which constitute an immediate hazard to human life or property. However, the dam has some deficiencies which require further investigation and remedial action.		

cont

Using the Corps of Engineers' "screening criteria" for the initial review of spillway adequacy, it has been determined that the embankment would be overtapped for all storms in excess of 28% of the Probable Maximum Flood (PMF). The spillway is therefore adjudged as "seriously inadequate" and the dam is assessed as unsafe, non-emergency.

The classification of unsafe, applied to a dam because of a seriously inadequate spillway is not meant to connote the same degree of emergency as would be associated with an 'unsafe' classification applied for a structural deficiency. It does mean that there appears to be a serious deficiency in spillway capacity and if a severe storm were to occur, overtopping and failure of the dam could take place, significantly increasing the hazard to loss of life downstream of the dam.

DELAWARE RIVER BASIN
WILLIAM H. LUEHMANN RECREATION
POND DAM
DELAWARE COUNTY, NEW YORK
INVENTORY NO. N.Y. 1199
PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM



APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION UNLIMITED

NEW YORK DISTRICT CORPS OF ENGINEERS
AUGUST, 1981

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
WILLIAM H. LUEHMANN RECREATION POND DAM
I.D. NO. 1199 DEC 119B 1337
DELAWARE COUNTY, N.Y.

TABLE OF CONTENTS

		<u>PAGE NO.</u>
-	ASSESSMENT	-
-	OVERVIEW PHOTOGRAPH	-
1	PROJECT INFORMATION	1
1.1	GENERAL	1
1.2	DESCRIPTION OF PROJECT	1
1.3	PERTINENT DATA	2
2	ENGINEERING DATA	3
2.1	GEOLOGY	3
2.2	SUBSURFACE INVESTIGATIONS	3
2.3	DAM AND APPURTENANT STRUCTURES	3
2.4	CONSTRUCTION RECORDS	3
2.5	OPERATION RECORDS	3
2.6	EVALUATION OF DATA	3
3	VISUAL INSPECTION	4
3.1	FINDINGS	4
3.2	EVALUATION OF OBSERVATIONS	5
4	OPERATION AND MAINTENANCE PROCEDURES	6
4.1	PROCEDURES	6
4.2	MAINTENANCE OF DAM	6
4.3	WARNING SYSTEM	6
4.4	EVALUATION	6

	<u>PAGE NO.</u>	
5	HYDROLOGIC/HYDRAULIC	7
5.1	DRAINAGE AREA CHARACTERISTICS	7
5.2	ANALYSIS CRITERIA	7
5.3	SPILLWAY CRITERIA	7
5.4	RESERVOIR CAPACITY	7
5.5	FLOODS OF RECORD	7
5.6	FLOODS OF RECORD	7
5.7	EVALUATION	7
6	STRUCTURAL STABILITY	8
6.1	VISUAL INSPECTION	8
7	ASSESSMENT/RECOMMENDATIONS	9
7.1	ASSESSMENT	9
7.2	RECOMMENDED MEASURES	10

APPENDICES

APPENDIX A	PHOTOGRAPHS
APPENDIX B	VISUAL INSPECTION CHECKLIST
APPENDIX C	HYDROLOGIC/HYDRAULIC ENGINEERING DATA AND COMPUTATIONS
APPENDIX D	REFERENCES
APPENDIX E	DRAWINGS

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam: William H. Luehmann
Recreation Pond Dam

State Located: New York

County: Delaware County

Watershed: Delaware River Basin

Stream: Sherruck Brook
tributary of Cannonsville
Reservoir

Date of Inspection: April 30, 1981

ASSESSMENT

The examination of documents and the visual inspection of William H. Luehmann Dam did not reveal conditions which constitute an immediate hazard to human life or property. However, the dam has some deficiencies which require further investigation and remedial action.

Using the Corps of Engineers' "screening criteria" for the initial review of spillway adequacy, it has been determined that the embankment would be overtopped for all storms in excess of 28% of the Probable Maximum Flood (PMF). The spillway is therefore adjudged as "seriously inadequate" and the dam is assessed as unsafe, non-emergency.

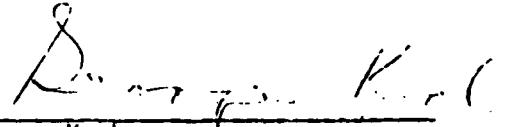
The classification of unsafe, applied to a dam because of a seriously inadequate spillway is not meant to connote the same degree of emergency as would be associated with an 'unsafe' classification applied for a structural deficiency. It does mean that there appears to be a serious deficiency in spillway capacity and if a severe storm were to occur, overtopping and failure of the dam could take place, significantly increasing the hazard to loss of life downstream of the dam.

It is therefore recommended that within 6 months of notification to the owner, a detailed hydrological/hydraulic investigation of the structure be undertaken to more accurately determine the site specific characteristics of the watershed.

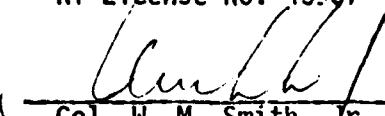
The results of this investigation will determine the appropriate remedial measures which will be required. In the interim, a detailed emergency action plan must be developed and implemented during unusually heavy precipitation. Also, around-the-clock surveillance of the structure must be provided during these periods.

In addition, the dam has a number of problem areas which, if left uncorrected, have the potential for the development of hazardous conditions and must be corrected within one year. These areas are:

- a. The slopes at the downstream toe appear very steep and lack vegetative cover. The areas include the drain channel and left side of the spillway channel. Backfill slope to existing wall at drain and seed the slope.
- b. Remove trees and brush growing on the embankment between the drain and spillway.
- c. Repair deteriorated concrete on the spillway walls and stepped channel.
- d. Provide a program of periodic inspection and maintenance of the dam. Document this information for future reference.
- e. Develop the aforementioned emergency action plan.


George Koch
Chief, Dam Safety Section
New York State Department
of Environmental Conservation
NY License No. 45937

Approved by:


Col. W. M. Smith, Jr.
New York District Engineer

Date:

14 Sept 81

OVERVIEW - WILLIAM LUEHMANN RECREATION POND DAM



PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
WILLIAM H. LUEHMANN RECREATION POND DAM
I.D. NO. 1199 DEC 1198 1337
DELAWARE COUNTY, N.Y.

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase I inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers, to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.

b. Purpose of Inspection

This inspection was conducted to evaluate the existing conditions of the dam, to identify deficiencies and hazardous conditions, to determine if these deficiencies constitute hazards to life and property, and to recommend remedial measures where required.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

The William H. Luehmann Recreation Pond Dam is an earth fill structure about 300 feet long and 18 feet high. The alignment of the embankment is circular with the spillway approach channel and spillway located at the right abutment. The spillway consists of a 24 feet wide, concrete control section, which leads to a concrete stepped channel to the original stream bed. The channel walls consist of laid up stone with a 3 to 4 four inch thick reinforced concrete capping. The reservoir drain is an 18 inch steel pipe through the center of the embankment.

b. Location

The dam is located on Sherruck Brook which is a tributary to the Cannonsville Reservoir, Delaware River Basin. It is adjacent to the Mormon Hollow Road approximately 2.3 miles southwest of Trout Creek, NY.

c. Size

The dam is 18 feet high and impounds 362 acre feet at normal water surface elevation. The dam is classified as "small" in size.

d. Hazard Classification

The dam is classified as high hazard due to its location above several homes along the downstream channel. The homes are located in the town of Tompkins, Delaware County.

e. Ownership

The dam is owned by Ms. Pamela Dawber, 9911 W. Pico Blvd. P.H.A. Los Angeles, California. A local address for Ms. Dawber is East River Road, Walton, New York (607) 875-7373.

f. Purpose of Dam

The dam is used for recreational purposes.

g. Design and Construction History

The original dam on the site was used to power a mill. In 1956, the dam was raised and the spillway consisted of a 30 inch conduit, with a 4 feet concrete box inlet at the upstream toe of the present dam. In 1970, the present spillway was constructed, however, no water flowed over it until 1975. In 1980, the 30 inch conduit was replaced by an 18 inch steel pipe now used as a reservoir drain. The concrete box intake remains blocked with a steel plate. The plate can be removed with a cable which is tied to the embankment near the spillway.

h. Normal Operating Procedures

All flows are discharged over the spillway. The reservoir drain can be opened by use of the cable which is connected to the steel plate covering the opening.

1.3 PERTINENT DATA

<u>a. Drainage Area (sq.mi.)</u>	3.05
<u>b. Elevations (ft. USGS Datum)</u>	
Top of Dam	1500
Spillway Crest	1494
Original Stream Invert	1482
<u>c. Reservoir (Acres; acre feet)</u>	
Surface Area @ Top of Dam (acres)	45.0
Surface Area @ Spillway Crest (acres)	33.0
Storage @ Top of Dam (acre feet)	362.0
Storage @ Spillway Crest (acre feet)	130.0
<u>d. Dam</u>	
Type: Earth fill with clay core.	
Length (ft)	300.
Height (ft)	18.
Upstream slope	1:2.0
Downstream Slope	1:2.5
Crest Width	10
<u>e. Spillway</u>	
Type: Concrete channel forming a broad crested weir with a stepped energy dissipating outlet channel. Walls are of laid up stone with concrete cap.	
Weir Length (ft)	24.
Maximum Spillway Capacity (cfs)	1058.
<u>f. Reservoir Drain:</u>	
Type: 18 inch steel pipe through the embankment, concrete intake closed by a steel plate which can be removed with a cable.	

SECTION 2: ENGINEERING DATA

2.1 GEOLOGY

The William H. Luehmann Recreation Pond is located in the "Appalachian Uplands" physiographic province of New York State. This province (northern extreme of the Appalachian Plateau) was formed by the dissection of the uplifted, but flat lying sandstones and shales of the Middle and Upper Devonian Catskill Delta. Relief is high to moderate. Drainage in the vicinity is southeastward toward the Delaware River System.

2.2 SUBSURFACE INVESTIGATION

No subsurface investigation could be located for this project. However, the "General Soil Map of New York State" prepared by Cornell University Agriculture Experiment Station indicates that the surficial soils are of the Oquaga Association. This soil association, of glacial till origin, has moderate to good drainage characteristics. Most of the area is forested and only locally in the valleys is there cultivable land.

2.3 DAM AND APPURTENANT STRUCTURES

The spillway size and general embankment was designed by Andrew Tweedie, C.E. Delmar, New York. However, the dam was reconstructed by the owner who followed the design but not the layout. The design of the dam is an earth embankment with clay core. The spillway is cut into the natural right abutment and is a stepped channel formed of stone and concrete.

2.4 CONSTRUCTION RECORDS

No construction records are available, however, Mr. William Luehmann, the constructor of the dam lives immediately adjacent to the dam.

2.5 OPERATION RECORDS

No operation records of the dam other than the accounts of Mr. William Luehmann are available.

2.6 EVALUATION OF DATA

Data presented in this report has been made available by the visual inspection of the dam, conversation with Mr. William Luehmann, and information located in the files at N.Y.S. Department of Environmental Conservation. This information appears adequate and reliable for Phase I Inspection purposes.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of the William Luehmann Recreation Pond Dam was conducted on April 30, 1981. The weather was partly cloudy and the temperature ranged in the 50's. The reservoir level was approximately 0.25 feet above the spillway crest.

b. Embankment

The embankment is circular in alignment and approximately 18 feet high at its maximum. The area where the original drop inlet spillway was replaced with the steel reservoir drain is quite steep and showing some signs of erosion. There are some trees and brush growing on the embankment and spur between the reservoir drain and spillway channel.

c. Seepage

No seepage could be found along the abutment contacts or at the toe of the embankment. During the inspection, due to flow in the spillway, it could not be determined if there was any signs of seepage under or around the spillway channel.

d. Spillway

The approach channel and spillway appeared to be in fair condition. Although functioning well, signs of deterioration are apparent. The concrete is spalling and reinforcing is showing in several areas. The embankment adjacent to the concrete walls are in need of maintenance. Both deterioration and erosion are most apparent at the downstream end of the left spillway wall (Photo# 3) The apron and steps could not be seen at the time of investigation. It is unknown precisely what condition they are in.

e. Reservoir Drain

The reservoir drain consists of an 18" steel pipe located in the center of the embankment. It was placed in 1980 after the original 30" CMP had deteriorated to the point of collapsing. The intake consists of a 4 feet box which is covered with a 1/2 inch steel plate. This plate can be removed by means of a cable which runs to the left spillway abutment.

f. Downstream Channel

The channel immediately below the dam flows directly into the natural channel which runs under a roadway 300 feet downstream. There is a four foot culvert under the intersection which frequently clogs with debris and backs water up to the base of the dam.

g. Reservoir

There are no visible signs of instability or sedimentation problems in the reservoir area.

3.2 EVALUATION OF OBSERVATIONS

Visual inspection of the William Luehmann Recreation Pond Dam revealed the following deficiencies:

- a. The slopes at the downstream toe appear very steep and lack vegetative cover. The areas include the drain channel and left side of the spillway channel.
- b. Trees and brush are growing on the embankment between the drain and spillway.
- c. The concrete on the spillway is spalling and in need of maintenance.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURE

4.1 PROCEDURES

The spillway is a free overflow which requires no operation. Therefore, the normal water surface elevation is approximated by the spillway crest, 1494. feet U.S.G.S. Datum.

4.2 MAINTENANCE OF THE DAM

The dam has been maintained by Mr. William Luehmann since its raising in 1956. Maintenance, now the responsibility of Ms. Pamela Dawber, the present owner, is not considered satisfactory as evidenced by the unvegetated lower slopes, trees and brush on the embankment and deteriorated concrete of the spillway.

4.3 WARNING SYSTEM

There is no warning system in effect or preparation.

4.4 EVALUATION

The dam has not been maintained in satisfactory condition as noted in "Section 3: Visual Inspection".

SECTION 5: HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA CHARACTERISTICS

The dam is located on Sherruck Brook about 2.3 miles southwest of the Village of Trout Creek. The total drainage area of the contributing basin is 3.05 square miles. The reservoir surface area at normal pool is 32.6 acres. The basin drains generally in a south to south-easterly direction. Much of the basin is wooded with slopes ranging from mild to steep. It was analysed as a single basin.

5.2 ANALYSIS CRITERIA

The analysis of the spillway capacity of the dam and storage of the reservoir was performed using the Corps of Engineers HEC-1 computer program incorporating the "Snyder Synthetic Unit Hydrograph" method and the "Modified Puls" flood routing procedure. The floods selected for analysis were the PMF and 1/2 the PMF in accordance with the recommended guidelines of the Corps of Engineers.

5.3 SPILLWAY CAPACITY

The spillway has a capacity of 1058 cfs at top of dam. An inflow of 2874 cfs generated by a storm equal to 1/2 the PMF will produce a maximum outflow of 2860 cfs and the resulting maximum depth of water over the dam will be about 1.36 feet. An inflow of 5748 cfs resulting from the PMF will produce a maximum outflow of 5748 cfs and the resulting maximum depth of water over the dam is expected to be about 2.68 feet.

5.4 RESERVOIR CAPACITY

The storage capacity of the reservoir to normal water elevation is 130 acre-feet. Surcharge storage to top of dam is an additional 232 acre-feet, creating a total storage of 362 acre-feet. The surcharge storage between the crest of the spillway and the dam is equivalent to 1.43 inches of runoff.

5.5 FLOODS OF RECORD

No records of past flooding in Sherruck Brook are available.

5.6 OVERTOPPING POTENTIAL

Our analysis indicates that the dam will be overtopped by about 1.36 feet of water during a storm equal to 1/2 the PMF in magnitude. A storm as large as the PMF is expected to increase this overtopping to about 2.68 feet.

5.7 EVALUATION

The spillway is inadequate to handle flows produced by the PMF as well as 1/2 the PMF since the overtopping of the dam caused by these storms would, besides endangering the dam, create flooding problems at some of the homes located downstream.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF VISUAL INSPECTION

a. Visual Observation

The steep slopes around the drain outlet and left spillway channel wall should be graded and seeded. Although there seemed to be no active erosion in these areas, the slopes should be protected.

b. Design and Construction Data

No information could be located regarding the stability of the structure.

c. Operating Records

No operating problems were reported which would affect the stability of the dam.

d. Post Construction Changes

The original dam was raised in 1956 to its present height. The spillway was constructed in 1970 and the 30 inch CMP drain was replaced with the 18 inch steel drain in 1980.

e. Seismic Stability

The structure is located in Zone 1 on the Corps of Engineers' seismic map. No stability analysis was performed for this structure.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

The Phase I Inspection of the William H. Luehmann Recreation Pond Dam revealed that the spillway is "seriously inadequate", based upon the Corps of Engineer's screening criteria. The outflows from any storm in excess of 28% of the PMF will overtop the dam. This overtopping could cause breaching of the dam and the resulting flood wave would significantly increase the hazard to downstream residents. For these reasons, the dam has been assessed as unsafe, non-emergency.

In addition, the dam has a number of problem areas which, if left uncorrected, have the potential for the development of hazardous conditions. These areas are:

1. The slopes at the downstream toe appear very steep and lack vegetative cover. These areas include the drain channel and left side of the spillway channel.
2. Trees and brush growing on the embankment between the drain and spillway.
3. The deteriorated concrete on the spillway-walls and stepped channel.

b. Adequacy of Information

The information reviewed is considered adequate for Phase I Inspection purposes.

c. Need for Additional Investigations

Since the spillway is considered to be "seriously inadequate", an additional hydrologic/hydraulic investigation is required to more accurately determine the site specific characteristics of the watershed. The result of the investigation will determine the appropriate remedial measures for the spillway.

d. Urgency

The additional hydrologic/hydraulic investigation must be initiated within six months from the date of notification. Within 1 year of notification, remedial measures as a result of these investigations must be initiated with completion of the measures during the following year. In the interim, develop an emergency action plan for notification of downstream residents and proper governmental authorities in the event of overtopping and provide round-the-clock surveillance of the dam during extreme runoff. The other problem areas listed below must be corrected within one year from notification.

7.2 RECOMMENDED MEASURES

1. The results of the hydrologic/hydraulic investigation will determine the appropriate remedial actions for the spillway.
2. Backfill the slopes at the downstream toe and seed.
3. Remove trees and brush on embankment between the drain and spillway.
4. Repair spalling concrete on spillway walls.

APPENDIX A
PHOTOGRAPHS



PHOTO 2 - OVERVIEW OF SPILLWAY AND DOWNSTREAM CHANNEL

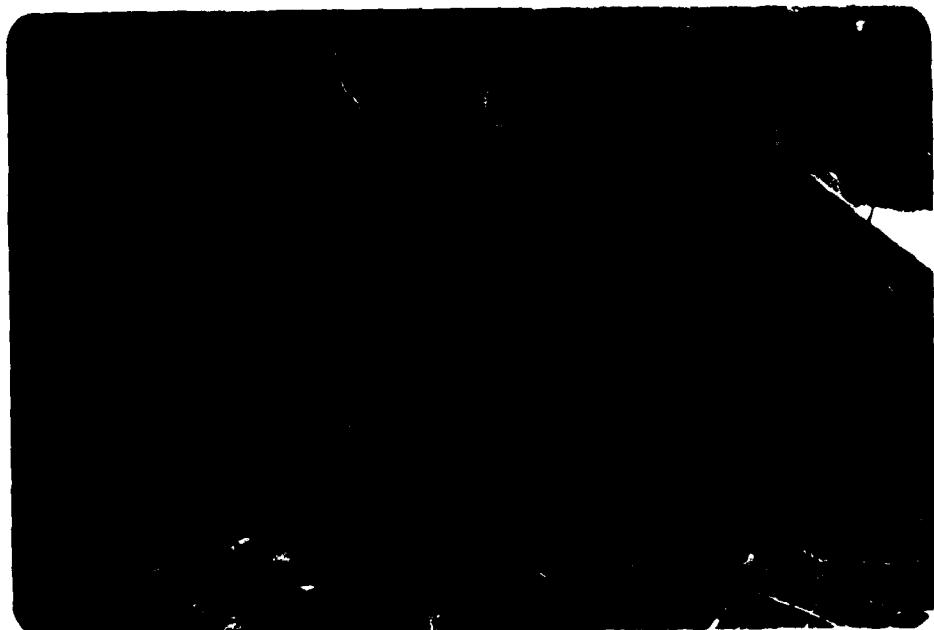


PHOTO 3 - LEFT SPILLWAY ABUTMENT
NOTE: DETERIORATION OF CONCRETE

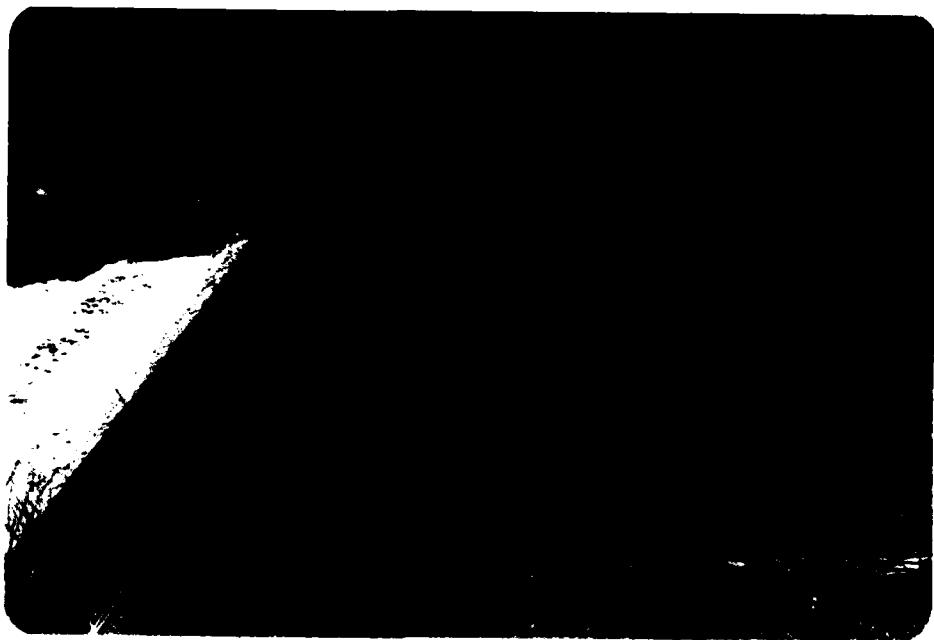


PHOTO 4 - RIGHT SPILLWAY ABUTMENT
NOTE: DETERIORATION OF CONCRETE



PHOTO 5 - SPILLWAY APPROACH CHANNEL



PHOTO 6 - DOWNSTREAM VIEW OF DAM
SPILLWAY ON LEFT, DRAIN OUTLET CHANNEL ON RIGHT



PHOTO 7 - DOWNSTREAM TOE OF EMBANKMENT
NOTE: STEEPNESS AND LACK OF VEGETATIVE COVER AT TOE



PHOTO 8 - CLOSEUP OF RESERVOIR DRAIN OUTLET



PHOTO 9 - DOWNSTREAM SLOPE OF CIRCULAR EMBANKMENT



PHOTO 10 - RESERVOIR FROM CREST OF EMBANKMENT

APPENDIX B
VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST1) Basic Data

a. General

Name of Dam William Luehmann Rec. Pd. Dam.Fed. I.D. # NY 1199 DEC Dam No. 119B-1337River Basin DELAWARELocation: Town TOMPKINS County DELAWAREStream Name SHERRICK BROOKTributary of CANNONSVILLE RESERVOIRLatitude (N) 42°10.8' Longitude (W) 75°18.7'Type of Dam EARTHFILLHazard Category C - highDate(s) of Inspection APRIL 30, 1981Weather Conditions PARTIALLY CLOUDY - 50'sReservoir Level at Time of Inspection 0.25' OVER SPILLCRESTb. Inspection Personnel KEN HARRER JAMIE VEITCH

c. Persons Contacted (Including Address & Phone No.)

William Luehmann

d. History:

Date Constructed ? Date(s) Reconstructed 1956 - RAISEDDesigner ANDREW D. Tweedie / William Luehmann 1970 - NEW SPILLWAY
1980 - NEW RES. DEAMConstructed By William LuehmannOwner Pamela Dawber, 9911 W. Pico Blvd., P.H.A.
Los Angeles CA.

2) Embankment

a. Characteristics

(1) Embankment Material EARTH FILL(2) Cutoff Type NONE(3) Impervious Core CLAY CORE(4) Internal Drainage System NONE(5) Miscellaneous Fill around drain outlet to reduce slope

b. Crest

(1) Vertical Alignment good(2) Horizontal Alignment CIRCULAR - good.(3) Surface Cracks NONE

(4) Miscellaneous _____

c. Upstream Slope

(1) Slope (Estimate) (V:H) _____

(2) Undesirable Growth or Debris, Animal Burrows trees & brush on Spur between spillway channel & drain channel(3) Sloughing, Subsidence or Depressions NONE

(4) Slope Protection well vegetated except for lower downstream slope around drain.

(5) Surface Cracks or Movement at Toe NONE

d. Downstream Slope

(1) Slope (Estimate - V:H) _____

(2) Undesirable Growth or Debris, Animal Burrows None

(3) Sloughing, Subsidence or Depressions NONE

(4) Surface Cracks or Movement at Toe None

(5) Seepage NONE

(6) External Drainage System (Ditches, Trenches; Blanket) None

(7) Condition Around Outlet Structure Needs to be backfilled

(8) Seepage Beyond Toe None

e. Abutments - Embankment Contact

good

(1) Erosion at Contact None

(2) Seepage Along Contact None Found

3) Drainage System

a. Description of System None

b. Condition of System —

c. Discharge from Drainage System —

4) Instrumentation (Monumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.)

None

5) Reservoir

a. Slopes shallow

b. Sedimentation NOT A PROBLEM AT PRESENT

c. Unusual Conditions Which Affect Dam NONE

6) Area Downstream of Dam

a. Downstream Hazard (No. of Homes, Highways, etc.) several

low lying homes, channel makes several road crossings

b. Seepage, Unusual Growth None

c. Evidence of Movement Beyond Toe of Dam NONE

d. Condition of Downstream Channel good

7) Spillway(s) (Including Discharge Conveyance Channel)

a. General some deterioration of walls

b. Condition of Service Spillway

c. Condition of Auxiliary Spillway None

d. Condition of Discharge Conveyance Channel good

8) Reservoir Drain/OutletType: Pipe Conduit _____ Other _____Material: Concrete _____ Metal steel Other _____Size: 18" Length _____

Invert Elevations: Entrance _____ Exit _____

Physical Condition (Describe): good Unobservable _____Material: steelJoints: _____ Alignment goodStructural Integrity: good (new) 1980

Hydraulic Capability: _____

Means of Control: Gate Valve _____ Uncontrolled _____Operation: Operable Inoperable _____ Other _____Present Condition (Describe): good

9) Structural

a. Concrete Surfaces spillway deteriorated

b. Structural Cracking —

c. Movement - Horizontal & Vertical Alignment (Settlement) —

d. Junctions with Abutments or Embankments —

e. Drains - Foundation, Joint, Face —

f. Water Passages, Conduits, Sluices —

g. Seepage or Leakage NONE

h. Joints - Construction, etc. NONE

i. Foundation —

j. Abutments good -

k. Control Gates operable (removable plate)

l. Approach & Outlet Channels good

m. Energy Dissipators (Plunge Pool, etc.) good - stepped

spillway channel

n. Intake Structures operable (drain)

o. Stability good

p. Miscellaneous —

10) Appurtenant Structures (Power House, Lock, Gatehouse, Other)

a. Description and Condition None

11) Operation Procedures (Lake Level Regulation):

None

APPENDIX C
HYDROLOGIC/HYDRAULIC
ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

1

AREA-CAPACITY DATA:

	<u>Elevation</u> (ft.)	<u>Surface Area</u> (acres)	<u>Storage Capacity</u> (acre-ft.)
1) Top of Dam	<u>1500</u>	<u>45.00</u>	<u>362</u>
2) Design High Water (Max. Design Pool)	<u>—</u>	<u>—</u>	<u>—</u>
3) Auxiliary Spillway Crest	<u>—</u>	<u>—</u>	<u>—</u>
4) Pool Level with Flashboards	<u>—</u>	<u>—</u>	<u>—</u>
5) Service Spillway Crest	<u>1494</u>	<u>32.60</u>	<u>130</u>

DISCHARGES

	<u>Volume</u> (cfs)
1) Average Daily	<u>—</u>
2) Spillway @ Maximum High Water	<u>1058</u>
3) Spillway @ Design High Water	<u>—</u>
4) Spillway @ Auxiliary Spillway Crest Elevation	<u>—</u>
5) Low Level Outlet	<u>36</u>
6) Total (of all facilities) @ Maximum High Water	<u>1094</u>
7) Maximum Known Flood	<u>—</u>
8) At Time of Inspection	<u>18</u>

CREST:

ELEVATION: 1500Type: EarthWidth: 12 ftLength: 300 ftSpillover —Location —

SPILLWAY:

SERVICE

1494

Elevation

AUXILIARY

NoneConcrete, Broad-Crested Type24 ft

Width

Type of Control✓

Uncontrolled

Controlled:

—Type
(Flashboards; gate)—

Number

—

Size/Length

Invert Material

Anticipated Length
of operating service—

Chute Length

12 ftHeight Between Spillway Crest
& Approach Channel Invert
(Weir Flow)

HYDROMETEROLOGICAL GAGES:

Type : None

Location: _____

Records:

Date - _____

Max. Reading - _____

FLOOD WATER CONTROL SYSTEM:

Warning System: None

Method of Controlled Releases (mechanisms):

Low level outlet18" Steel pipe

DRAINAGE AREA: 3.05 mi.²

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: Woods, open fields. Some houses downstream

Terrain - Relief: Single basin, Relief high to moderate

Surface - Soil: Oquaga Soils of glacial till origin

Runoff Potential (existing or planned extensive alterations to existing
(surface or subsurface conditions)

No alterations planned or anticipated.

Drainage characteristics - moderate

Potential Sedimentation problem areas (natural or man-made; present or future)

No indication of sedimentation

Potential Backwater problem areas for levels at maximum storage capacity
including surcharge storage:

None except downstream

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the
Reservoir perimeter:

Location: None

Elevation: _____

Reservoir:

Length @ Maximum Pool _____ (Miles)

Length of Shoreline (@ Spillway Crest) _____ (Miles)

Willy Luehman Lake Dam

1 of 3

Drainage Area =
$$\frac{21.25 \times 2400 \times 24000}{144 \times 5280 \times 5280}$$

Received from USGS topo sheet
= 3.05 mi.²
= 1,951 acres.

Spillway Crest Elev. = 1494
Dam crest elev. = 1500
Length of spillway = 24 ft.
Length of dam = 300 ft. (as per inspection by Jamie)
Max. height of dam = 18 ft.

Elev. vs. Lake Surface Area

<u>Elev.</u>	<u>Surface Area (acres)</u>
--------------	-----------------------------

1482	0.00
1494	32.60
1500	45.00
1520	74.38

Spillway Capacity

Assume $C = 3.0$ (Broad Crested)

EL.	H	$H^{3/2}$	C	L	Q (cfs)
1494	0	0	3.0	24	0
1495	1	1	3.0	24	72
1496	2	2.83	3.0	24	204
1497	3	5.20	3.0	24	374
1498	4	8.00	3.0	24	576
1499	5	11.18	3.0	24	805
1500	6	14.70	3.0	24	1058
1501	7	18.52	3.0	24	1333

Drainage Area = 3.05 mi²

Precipitation: $\leq PMP = 21.4"$ (H.M. No. 33)

<u>DUR.</u>	6	12	24	48
%	111	123	133	142

$$L_{CA} = \frac{3.7 \times 2000}{5280} = 1.40 \text{ mi.}$$

$$L = \frac{7.65 \times 2000}{5280} = 2.90 \text{ mi.}$$

Assume $C_t = 2.0$ $C_p = 0.625$

3 of 3

$$t_p = C_t (L \times L_{CA})^{0.3}$$
$$= 2 \times (\underline{2.9 \times 1.4})^{0.3} = 3.05 \text{ hr.}$$

$$t_f = \frac{t_p}{5.5} = \frac{3.05}{5.5} = 0.55 \text{ hr. } \underline{\text{Use 30 mins}}$$

$$T_p = t_p + 0.25(t_R - t_f)$$
$$= 3.05 + 0.25(0.50 - 0.55)$$
$$= 3.05 - 0.25 \times 0.05$$
$$= 3.05 - 0.01$$
$$= 3.04 \text{ hr.}$$

$$TF = 1 - \frac{0.3008}{(3.05)^{0.17718}}$$

$$= 0.753, \text{ say } 0.80$$

[Let computer use 0.80 for drainage area $< 10 \text{ sq. miles}$]

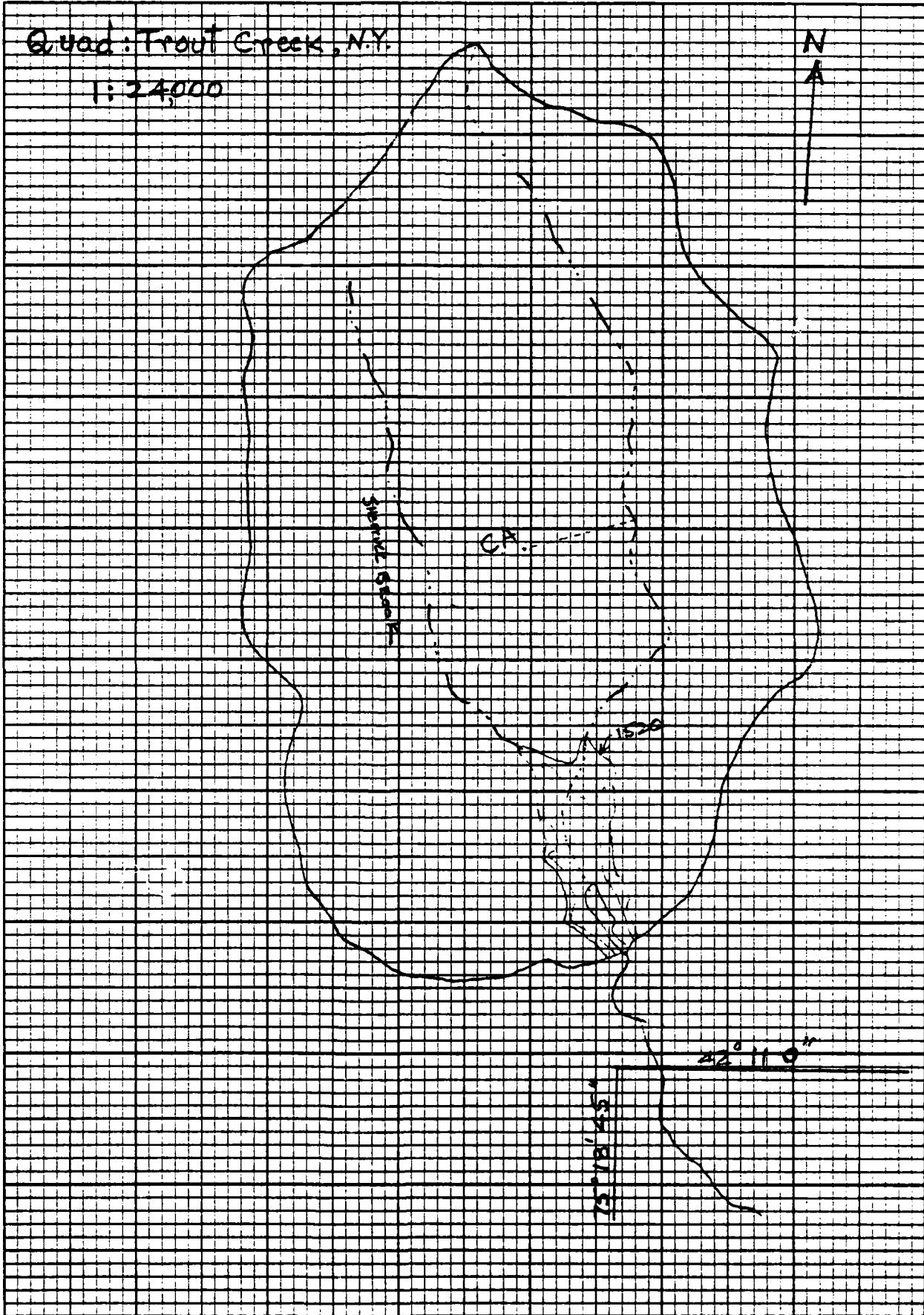
Quad: Trout Creek, N.Y.

1: 24,000

N

46 0782

K-E 10 X 10 TO THE INCH - 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.



FLDOC HYDROGRAPH PACKAGE (HEC-1)
CAN SAFETY VERSION JULY 1978
LAST MODIFICATION 26 FEB 79
MODIFIED FOR HOCKEYVILLE APR 79

RUN DATE 01/27/81
WILLY LLEHMAN LAKE DAM
PHASE 1
PMF

NA	NH4	NP1P	IDAY	JOB SPECIFICATION
200	0	31	0	IPUT = 0 IHR = 0 ININ = 0 PETRC = 0 NWT = 0 TROP1 = 0 TRACE = 0
			5	

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN = 1 NRTIO = 6 LRTIO = 1
R10S = 0.20 0.40 0.50 0.60 0.80 1.00

SUB-AREA RUNOFF COMPUTATION

INFLOW FROM BASIN ISTAQ	ICOMP	RECCN	ITAPE	JPLT	JPRI	INAME	ISTAGE	IAUTO
1	0	0	0	2			0	0

HYDREG	ILIG	TAFFA	SNAP	TRSDA	IRSPC	RATIO	ISNOW	ISAME	LOCAL
1	3.05	0.	3.05	0.	0.	0.	0	0	0
SPFE	PIS	R6	R12	R24	R48	R72	R96		
0.	21.40	111.00	123.0	133.00	142.00	0.	0.		

TPC = 2.06 CP=0.63 RTA = 0
TPC COMPUTED BY THE PROGRAM IS 0.000

INPUT	STMR	DLTKR	MTOL	ERAIN	STNS	RTQK	STRL	CNSTL	ALSMX	ATIMP
0	0.	1.00	0.	0.	0.	1.00	1.00	0.	0.	0.

TP = 2.06 CP=0.63 RTA = 0

LOSS DATA

RECEDITION DATA
STR1C = -2.00 QRC5A = -0.10 RT0R = 2.50

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC = 6.99 AND R = 5.34 INTERVALS

UNIT HYDROGRAPH 3A END-OF-PERIOD ORDINATES, LAG = 3.03 HOURS, CP = 0.62 VOL = 1.00
25. 91. 181. 277. 357. 402. 406. 363. 363.
211. 176. 197. 123. 102. 85. 71. 60. 50.
35. 29. 24. 20. 17. 14. 12. 10. 8.
6. 5. 4. 3. 3. 2. 1. 7. 7.

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL	VOLUME
CFS	163.	4491.	1681.	585.	84259.
CPS		126.	48.	17.	2386.
INCHES		13.54	20.51	21.40	21.42
MM		344.03	521.04	543.54	543.95
AC-FT		2202.	3335.	3479.	3482.
IMMOL CU M		2716.	6114.	4291.	4295.
SUM	24.31	20.62	3.69		84257.
	(617.) (524.) (94.)				(2385.89)

3 -30 551	4 -08 561	4 -36 571	5 -00 581	5 -36 591	6 -00 601.	6 -30 611	7 -00 621	7 -30 631
8 -00 641	8 -36 651	9 -00 661	9 -30 671	10 -00 681	10 -30 691	11 -00 701	11 -30 711	12 -00 721
12 -30 731	13 -00 741	13 -30 751	14 -00 761	14 -30 771	15 -00 781	15 -30 791	16 -00 801	17 -00 811
17 -30 821	18 -00 831	18 -30 841	19 -00 851	19 -30 861	20 -00 871	20 -30 881	21 -00 891	21 -30 901
22 -00 911	22 -30 921	23 -00 931	23 -30 941	24 -00 951	24 -30 961	25 -00 971	25 -30 981	26 -00 991
27 -00 1001	27 -30 1011	28 -00 1021	28 -30 1031	29 -00 1041	29 -30 1051	30 -00 1061	30 -30 1071	31 -00 1081
31 -30 1091	32 -00 1101	32 -30 1111	33 -00 1121	33 -30 1131	34 -00 1141	34 -30 1151	35 -00 1161	35 -30 1171

10.-0.0116.1
10.-JC117.1
10.-JC118.1
11.-JC119.1
11.-JC120.1
12.-JC121.1
13.-JC122.1
13.-JC123.1
14.-JC125.1
15.-JC126.1
15.-JC127.1
16.-JC128.1
16.-JC129.1
17.-0.01301.
17.-JC131.1
18.-0.01321.
18.-JC133.1
19.-0.01341.
19.-JC135.1
20.-0.01361.
20.-JC137.1
21.-0.01381.
21.-JC139.1
22.-0.01401.
22.-JC141.1
23.-0.01421.
23.-JC143.1
0. 1491
0. 3C145.1
1. 001461
1. 3C147.1
2. 001481
2. 3C149.1
3. 001501.
3. 3C151.1
4. 001521
4. 3C153.1
5. 001541
5. 3C155.1
6. 001561
6. 3C157.1
7. 001581
7. 3C159.1
8. 001601.
8. 3C161.1
9. 001621
9. 3C163.1
10. 001641
10. 3C165.1
11. 001661
11. 3C167.1
12. 001681
12. 3C169.1
13. 001701.
13. 3C171.1
14. 001721
14. 3C173.1
15. 001741

16.361771

17.061781

17.361791

18.061801

18.361811

19.061821

19.361831

20.061841

20.361851

21.061861

21.361871

22.061881

22.361891

23.061901

23.361911

0. 1921

0.361931

1.361941

1.361951

2.061961

2.361971

3.061981

3.361991

4.002001

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIC 1

	1.	1.	1.	1.	1.	1.	1.	1.
0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	1.	3.	6.	10.	13.	17.	19.	17.
0.	15.	11.	9.	6.	5.	4.	4.	3.
3.	5.	3.	3.	4.	4.	4.	5.	5.
6.	8.	12.	18.	27.	36.	45.	53.	60.
71.	75.	82.	99.	131.	175.	245.	325.	414.
670.	822.	970.	1066.	1150.	1150.	1062.	976.	858.
626.	527.	445.	376.	318.	270.	230.	196.	166.
119.	107.	96.	89.	61.	74.	68.	62.	56.
47.	43.	35.	36.	33.	30.	27.	25.	23.
15.	17.	16.	14.	13.	12.	11.	10.	9.
8.	7.	6.	6.	5.	5.	4.	4.	3.
3.	3.	3.	3.	2.	2.	2.	2.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.
0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.

CFS
CMS
INCHES
PH
AC-FT
THOUS CL M

PEAK
1150.
33.

6-HOUR
888.
25.

24-HOUR
336.
410.

72-HOUR
117.
3.

TOTAL VOLUME
16852.
477.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIC 2

	2.	2.	2.	2.	2.	2.	2.	2.
1.	1.	1.	1.	1.	1.	1.	1.	1.
0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	1.	5.	11.	19.	27.	33.	37.	34.
31.	26.	22.	18.	15.	13.	11.	9.	8.
6.	6.	6.	7.	7.	6.	9.	9.	10.
11.	15.	24.	37.	53.	71.	50.	107.	120.
142.	150.	164.	198.	261.	356.	490.	649.	825.
1340.	1647.	1941.	2172.	2299.	2165.	1951.	1717.	1478.
1252.	1054.	885.	751.	540.	459.	391.	333.	282.
238.	211.	195.	178.	146.	135.	124.	113.	103.
94.	86.	78.	71.	65.	55.	49.	45.	41.
38.	39.	31.	29.	26.	24.	22.	20.	18.
15.	16.	13.	11.	10.	9.	8.	7.	7.
6.	5.	5.	4.	4.	3.	3.	3.	3.
2.	2.	2.	2.	2.	2.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.

CFS
CPS
INCHES

PEAK
2299.
65.

6-HOUR
1776.
50.

24-HOUR
673.
19.

72-HOUR
239.
7.

TOTAL VOLUME
33704.
954.

THOUS CL M

1087. 1646. 1717. 1718.

HYDROGRAPH AT STA 1 FOR PLAN 1, RT10.3			
3.	2.	2.	2.
1.	1.	1.	1.
0.	0.	0.	0.
0.	2.	14.	24.
38.	33.	25.	19.
8.	7.	9.	10.
14.	19.	46.	89.
177.	187.	248.	448.
1675.	2059.	2715.	2874.
1565.	1318.	939.	795.
258.	263.	223.	203.
117.	107.	89.	81.
47.	45.	36.	33.
19.	17.	14.	13.
8.	7.	6.	5.
3.	3.	2.	2.
1.	1.	1.	1.
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.

PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME			
CFS 2874.	2220.	841.	252.
CFS 81.	63.	24.	8.
INCHES	6.77	10.26	10.70
INCHES	172.02	260.52	271.77
INCHES	1101.	1668.	1740.
AC-FT	1358.	2057.	2146.
THOUS CL M			2147.

HYDROGRAPH AT STA 1 FOR PLAN 1, RT10.4			
3.	3.	3.	2.
1.	1.	1.	1.
1.	0.	0.	0.
0.	2.	8.	29.
46.	33.	28.	23.
9.	9.	10.	11.
17.	23.	55.	80.
213.	225.	298.	393.
2010.	2471.	3258.	3449.
1879.	1582.	1127.	959.
357.	321.	267.	244.
141.	128.	107.	98.
56.	51.	43.	39.
25.	21.	17.	16.
9.	8.	7.	6.
4.	3.	3.	2.
1.	1.	1.	1.
1.	1.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.

PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME			
CFS 2449.	2655.	1009.	351.
CFS 98.	75.	29.	10.
INCHES	6.13	12.31	12.84
INCHES	12.31	12.84	12.85
INCHES	12.85	12.85	12.85

AC-FT THOUS CL H		1321. 1630.	2001. 2468.	2087. 2575.	2089. 2577.
HYDROGRAPH AT STA 1 FOR PLAN 1, RATIO 5					
4.	9.	3.	3.	3.	2.
2.	1.	1.	1.	1.	2.
1.	1.	1.	0.	0.	1.
0.	10.	23.	54.	67.	74.
61.	53.	44.	37.	31.	21.
12.	12.	12.	14.	15.	16.
22.	31.	46.	73.	106.	143.
284.	300.	325.	397.	523.	717.
2680.	3295.	3881.	4344.	4599.	4529.
2505.	2109.	1776.	1503.	1272.	1080.
476.	428.	391.	357.	325.	297.
188.	171.	156.	143.	130.	115.
75.	69.	63.	57.	52.	47.
30.	27.	25.	23.	21.	19.
12.	11.	10.	9.	8.	7.
5.	4.	4.	4.	3.	3.
2.	2.	2.	1.	1.	1.
1.	1.	1.	1.	0.	0.
0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.
PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME					
CFS	4559.	3553.	1345.	468.	67407.
CPS	130.	1001.	38.	13.	1909.
INCHES		10.84	16.41	17.12	17.13
PH		275.23	416.84	434.83	435.16
AC-FT		1752.	2668.	2783.	2785.
THOUS CL H		2173.	3291.	3433.	3436.
HYDROGRAPH AT STA 1 FOR PLAN 1, RATIO 6					
5.	9.	4.	4.	3.	3.
2.	2.	2.	1.	1.	2.
1.	1.	1.	1.	1.	1.
0.	4.	13.	28.	48.	67.
76.	66.	56.	46.	39.	32.
15.	15.	16.	17.	19.	20.
28.	38.	66.	91.	133.	178.
354.	375.	411.	496.	653.	956.
3350.	4119.	4851.	5430.	5748.	5412.
3131.	2636.	2222.	1878.	1590.	1350.
593.	535.	488.	446.	407.	371.
235.	214.	195.	178.	163.	148.
54.	66.	76.	71.	65.	55.
38.	34.	31.	29.	26.	24.
15.	14.	12.	11.	10.	9.
6.	5.	5.	4.	4.	3.
2.	2.	2.	2.	2.	2.
1.	1.	1.	1.	1.	1.
0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.
PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME					
CFS	5742.	4641.	1681.	1681.	29251.
CPS	682.	3632.	1186.	1186.	3186.

PM	344.03	521.04	543.50	543.95
AC-FT	2262.	3335.	3479.	3482.
THOUS GLN	2716.	4114.	4251.	4255.

WYOMING BOWLING

LINEAR PREDICTION

IS110	ICOMP	IECON	ITAPE	JPLI	INAME	ISVAGE	IAUTO
1	1	0	0	2	1	0	0
		ROUTING	DATA				
		TRES	ISAME	IOP1	IPMP		LSTA
		1	1	3	9		6
CLOSS	CLOSE	Avg					
0.	0.						
0.	0.						

ASIFES	MSIDOL	LAG	AMSKK	X	1SK	STORA ISPRÅ
1	0	0	0.	0.	0.	-1454.
1495.60	1496.00	1497.00	1498.00	1499.00	1500.00	1501.00

72.00	204.00	374.00	576.00	805.00	1058.00	1333.00
13.	45.	74.				
130.	362.	1544.				

CAREL	SFLID	COSH	EXPW	ELLEV	CNAL	CAREA	EXPL
1454.0	0.	0.	0.	0.	0.	0.	0.

TCPEL	COD	DATA	EXPD	DAMNIO	VAL
1500.0	3.0	1.5	300.		

STATION 10 PLAN 10 EATING 1

ND = NE = PFA 100 HYDROGRAPH COORDINATES

0.	0.	0.	0.
1.	2.	3.	4.
6.	6.	6.	6.
8.	10.	10.	10.
16.	55.	55.	55.
665.	763.	763.	763.
591.	534.	534.	534.
196.	160.	160.	160.
79.	72.	72.	72.
43.	43.	43.	43.
23.	21.	21.	21.
11.	10.	10.	10.
5.	6.	6.	6.
2.	2.	2.	2.

2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
229
230
231
232
233
234
235
236
237
238
239
239
240
241
242
243
244
245
246
247
248
249
249
250
251
252
253
254
255
256
257
258
259
259
260
261
262
263
264
265
266
267
268
269
269
270
271
272
273
274
275
276
277
278
279
279
280
281
282
283
284
285
286
287
288
289
289
290
291
292
293
294
295
296
297
298
299
299
300
301
302
303
304
305
306
307
308
309
309
310
311
312
313
314
315
316
317
318
319
319
320
321
322
323
324
325
326
327
328
329
329
330
331
332
333
334
335
336
337
338
339
339
340
341
342
343
344
345
346
347
348
349
349
350
351
352
353
354
355
356
357
358
359
359
360
361
362
363
364
365
366
367
368
369
369
370
371
372
373
374
375
376
377
378
379
379
380
381
382
383
384
385
386
387
388
389
389
390
391
392
393
394
395
396
397
398
399
399
400
401
402
403
404
405
406
407
408
409
409
410
411
412
413
414
415
416
417
418
419
419
420
421
422
423
424
425
426
427
428
429
429
430
431
432
433
434
435
436
437
438
439
439
440
441
442
443
444
445
446
447
448
449
449
450
451
452
453
454
455
456
457
458
459
459
460
461
462
463
464
465
466
467
468
469
469
470
471
472
473
474
475
476
477
478
479
479
480
481
482
483
484
485
486
487
488
489
489
490
491
492
493
494
495
496
497
498
499
499
500
501
502
503
504
505
506
507
508
509
509
510
511
512
513
514
515
516
517
518
519
519
520
521
522
523
524
525
526
527
528
529
529
530
531
532
533
534
535
536
537
538
539
539
540
541
542
543
544
545
546
547
548
549
549
550
551
552
553
554
555
556
557
558
559
559
560
561
562
563
564
565
566
567
568
569
569
570
571
572
573
574
575
576
577
578
579
579
580
581
582
583
584
585
586
587
588
589
589
590
591
592
593
594
595
596
597
598
599
599
600
601
602
603
604
605
606
607
608
609
609
610
611
612
613
614
615
616
617
618
619
619
620
621
622
623
624
625
626
627
628
629
629
630
631
632
633
634
635
636
637
638
639
639
640
641
642
643
644
645
646
647
648
649
649
650
651
652
653
654
655
656
657
658
659
659
660
661
662
663
664
665
666
667
668
669
669
670
671
672
673
674
675
676
677
678
679
679
680
681
682
683
684
685
686
687
688
689
689
690
691
692
693
694
695
696
697
698
699
699
700
701
702
703
704
705
706
707
708
709
709
710
711
712
713
714
715
716
717
718
719
719
720
721
722
723
724
725
726
727
728
729
729
730
731
732
733
734
735
736
737
738
739
739
740
741
742
743
744
745
746
747
748
749
749
750
751
752
753
754
755
756
757
758
759
759
760
761
762
763
764
765
766
767
768
769
769
770
771
772
773
774
775
776
777
778
779
779
780
781
782
783
784
785
786
787
788
789
789
790
791
792
793
794
795
796
797
798
799
799
800
801
802
803
804
805
806
807
808
809
809
810
811
812
813
814
815
816
817
818
819
819
820
821
822
823
824
825
826
827
828
829
829
830
831
832
833
834
835
836
837
838
839
839
840
841
842
843
844
845
846
847
848
849
849
850
851
852
853
854
855
856
857
858
859
859
860
861
862
863
864
865
866
867
868
869
869
870
871
872
873
874
875
876
877
878
879
879
880
881
882
883
884
885
886
887
888
889
889
890
891
892
893
894
895
896
897
898
899
899
900
901
902
903
904
905
906
907
908
909
909
910
911
912
913
914
915
916
917
918
919
919
920
921
922
923
924
925
926
927
928
929
929
930
931
932
933
934
935
936
937
938
939
939
940
941
942
943
944
945
946
947
948
949
949
950
951
952
953
954
955
956
957
958
959
959
960
961
962
963
964
965
966
967
968
969
969
970
971
972
973
974
975
976
977
978
979
979
980
981
982
983
984
985
986
987
988
989
989
990
991
992
993
994
995
996
997
998
999
999
1000
1001
1002
1003
1004
1005
1006
1007
1008
1009
1009
1010
1011
1012
1013
1014
1015
1016
1017
1018
1019
1019
1020
1021
1022
1023
1024
1025
1026
1027
1028
1029
1029
1030
1031
1032
1033
1034
1035
1036
1037
1038
1039
1039
1040
1041
1042
1043
1044
1045
1046
1047
1048
1049
1049
1050
1051
1052
1053
1054
1055
1056
1057
1058
1059
1059
1060
1061
1062
1063
1064
1065
1066
1067
1068
1069
1069
1070
1071
1072
1073
1074
1075
1076
1077
1078
1079
1079
1080
1081
1082
1083
1084
1085
1086
1087
1088
1089
1089
1090
1091
1092
1093
1094
1095
1096
1097
1098
1099
1099
1100
1101
1102
1103
1104
1105
1106
1107
1108
1109
1109
1110
1111
1112
1113
1114
1115
1116
1117
1118
1119
1119
1120
1121
1122
1123
1124
1125
1126
1127
1128
1129
1129
1130
1131
1132
1133
1134
1135
1136
1137
1138
1139
1139
1140
1141
1142
1143
1144
1145
1146
1147
1148
1149
1149
1150
1151
1152
1153
1154
1155
1156
1157
1158
1159
1159
1160
1161
1162
1163
1164
1165
1166
1167
1168
1169
1169
1170
1171
1172
1173
1174
1175
1176
1177
1178
1179
1179
1180
1181
1182
1183
1184
1185
1186
1187
1188
1189
1189
1190
1191
1192
1193
1194
1195
1196
1197
1198
1199
1199
1200
1201
1202
1203
1204
1205
1206
1207
1208
1209
1209
1210
1211
1212
1213
1214
1215
1216
1217
1218
1219
1219
1220
1221
1222
1223
1224
1225
1226
1227
1228
1229
1229
1230
1231
1232
1233
1234
1235
1236
1237
1238
1239
1239
1240
1241
1242
1243
1244
1245
1246
1247
1248
1249
1249
1250
1251
1252
1253
1254
1255
1256
1257
1258
1259
1259
1260
1261
1262
1263
1264
1265
1266
1267
1268
1269
1269
1270
1271
1272
1273
1274
1275
1276
1277
1278
1279
1279
1280
1281
1282
1283
1284
1285
1286
1287
1288
1289
1289
1290
1291
1292
1293
1294
1295
1296
1297
1298
1299
1299
1300
1301
1302
1303
1304
1305
1306
1307
1308
1309
1309
1310
1311
1312
1313
1314
1315
1316
1317
1318
1319
1319
1320
1321
1322
1323
1324
1325
1326
1327
1328
1329
1329
1330
1331
1332
1333
1334
1335
1336
1337
1338
1339
1339
1340
1341
1342
1343
1344
1345
1346
1347
1348
1349
1349
1350
1351
1352
1353
1354
1355
1356
1357
1358
1359
1359
1360
1361
1362
1363
1364
1365
1366
1367
1368
1369
1369
1370
1371
1372
1373
1374
1375
1376
1377
1378
1379
1379
1380
1381
1382
1383
1384
1385
1386
1387
1388
1389
1389
1390
1391
1392
1393
1394
1395
1396
1397
1398
1399
1399
1400
1401
1402
1403
1404
1405
1406
1407
1408
1409
1409
1410
1411
1412
1413
1414
1415
1416
1417
1418
1419
1419
1420
1421
1422
1423
1424
1425
1426
1427
1428
1429
1429
1430
1431
1432
1433
1434
1435
1436
1437
1438
1439
1439
1440
1441
1442
1443
1444
1445
1446
1447
1448
1449
1449
1450
1451
1452
1453
1454
1455
1456
1457
1458
1459
1459
1460
1461
1462
1463
1464
1465
1466
1467
1468
1469
1469
1470
1471
1472
1473
1474
1475
1476
1477
1478
1479
1479
1480
1481
1482
1483
1484
1485
1486
1487
1488
1489
1489
1490
1491
1492
1493
1494
1495
1496
1497
1498
1499
1499
1500
1501
1502
1503
1504
1505
1506
1507
1508
1509
1509
1510
1511
1512
1513
1514
1515
1516
1517
1518
1519
1519
1520
1521
1522
1523
1524
1525
1526
1527
1528
1529
1529
1530
1531
1532
1533
1534
1535
1536
1537
1538
1539
1539
1540
1541
1542
1543
1544
1545
1546
1547
1548
1549
1549
1550
1551
1552
1553
1554
1555
1556
1557
1558
1559
1559
1560
1561
1562
1563
1564
1565
1566
1567
1568
1569
1569
1570
1571
1572
1573
1574
1575
1576
1577
1578
1579
1579
1580
1581
1582
1583
1584
1585
1586
1587
1588
1589
1589
1590
1591
1592
1593
1594
1595
1596
1597
1598
1599
1599
1600
1601
1602
1603
1604
1605
1606
1607
1608
1609
1609
1610
1611
1612
1613
1614
1615
1616
1617
1618
1619
1619
1620
1621
1622
1623
1624
1625
1626
1627
1628
1629
1629
1630
1631
1632
1633
1634
1635
1636
1637
1638
1639
1639
1640
1641
1642
1643
1644
1645
1646
1647
1648
1649
1649
1650
1651
1652
1653
1654
1655
1656
1657
1658
1659
1659
1660
1661
1662
1663
1664
1665
1666
1667
1668
1669
1669
1670
1671
1672
1673
1674
1675
1676
1677
1678
1679
1679
1680
1681
1682
1683
1684
1685
1686
1687
1688
1689
1689
1690
1691
1692
1693
1694
1695
1696
1697
1698
1699
1699
1700
1701
1702
1703
1704
1705
1706
1707
1708
1709
1709
1710
1711
1712
1713
1714
1715
1716
1717
1718
1719
1719
1720
1721
1722
1723
1724
1725
1726
1727
1728
1729
1729
1730
1731
1732
1733
1734
1735
1736
1737
1738
1739
1739
1740
1741
1742
1743
1744
1745
1746
1747
1748
1749
1749
1750
1751
1752
1753
1754
1755
1756
1757
1758
1759
1759
1760
1761
1762
1763
1764
1765
1766
1767
1768
1769
1769
1770
1771
1772
1773
1774
1775
1776
1777
1778
1779
1779
1780
1781
1782
1783
1784
1785
1786
1787
1788
1789
1789
1790
1791
1792
1793
1794
1795
1796
1797
1798
1799
1799
1800
1801
1802
1803
1804
1805
1806
1807
1808
1809
1809
1810
1811
1812
1813
1814
1815
1816
1817
1818
1819
1819
1820
1821
1822
1823
1824
1825
1826
1827
1828
1829
1829
1830
1831
1832
1833
1834
1835
1836
1837
1838
1839
1839
1840
1841
1842
1843
1844
1845
1846
1847
1848
1849
1849
1850
1851
1852
1853
1854
1855
1856
1857
1858
1859
1859
1860
1861
1862
1863
1864
1865
1866
1867
1868
1869
1869
1870
1871
1872
1873
1874
1875
1876
1877
1878
1879
1879
1880
1881
1882
1883
1884
1885
1886
1887
1888
1889
1889
1890
1891
1892
1893
1894
1895
1896
1897
1898
1899
1899
1900
1901
1902
1903
1904
1905
1906
1907
1908
1909
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2039
2040
2041
2042
2043
2044
2045
2046
2047
2048
2049
2049
2050
2051
2052
2053
2054
2055
2056
2057
2058
2059
2059
2060
2061
2062
2063
2064
2065
2066
2067
2068
2069
2069
2070
2071
2072
20

PEAK OUTFLOW IS 886. AT TIME 44.50 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL	VOLUME
CFS	886.	750.	327.	117.	16854.	
CFS	25.	21.	9.	3.	477.	
INCHES		2.29	3.99	4.22	4.28	
INCHES		58.12	101.32	108.67	108.80	
INCHES		572.	599.	696.	696.	
AC-FT		1458.	1550.	1550.	1550.	
THOUS. CFS						

• Q.W.F. •

STATION 1

INFILTRATION, (OUTFLOW), AND OBSERVED FLOW (c.)

600. 800. 1000. 1200.

0.30	11			
1.00	21			
1.30	31			
2.00	41			
2.30	51			
3.00	51			
3.30	71			
4.00	81			
4.30	91			
5.00	101			
5.30	111			
6.00	121			
6.30	131			
7.00	141			
7.30	151			
8.00	161			
8.30	171			
9.00	181			
9.30	191			
10.00	201			
10.30	211			
11.00	221			
11.30	231			
12.00	241			
12.30	251			
13.00	261			
13.30	271			
14.00	281			
14.30	291			
15.00	301			
15.30	311			
16.00	321			
16.30	331			
17.00	341			
17.30	351			
18.00	3601			
18.30	3701			
19.00	3801			
19.30	3901			
20.00	4001			
20.30	4101			
21.00	4201			
21.30	4301			
22.00	441			
22.30	451			
23.00	451			
23.30	511			
24.00	511			
24.30	521			
25.00	521			
25.30	531			

A 2D grid of data points on a coordinate system. The horizontal axis (x) ranges from -4.50 to 1.50 with increments of 0.50. The vertical axis (y) ranges from -0.50 to 1.50 with increments of 0.50. The grid is composed of 100 vertical and 100 horizontal dotted lines. Data points are represented by small black dots. A prominent diagonal line of points runs from the bottom-left (approx. -4.00, -0.50) to the top-right (approx. 1.50, 1.50). A secondary diagonal line of points runs from the top-left (approx. -1.50, 1.50) to the bottom-right (approx. 1.50, -1.50). There are several isolated points scattered outside these two main diagonal bands, notably around (0.00, 0.00), (0.50, 0.50), and (1.00, 1.00).

11.36118.1	0
11.36119.1	0
12.36120.1	0
.32.36121.1	0
13.36122.1	0
13.36123.1	0
14.36124.1	0
14.36125.1	0
15.36126.1	0
15.36127.1	0
16.36128.1	0
16.36129.1	0
17.36130.1	0
18.36131.0	0
18.36132.0	0
18.36133.0	0
19.36134.0	0
19.36135.0	0
20.36136.0	0
20.36137.0	0
21.36138.0	0
21.36139.0	0
22.36140.0	0
22.36141.0	0
23.36142.0	0
23.36143.0	0
24.36144.0	0
24.36145.0	0
1.36146.0	0
1.36147.1	0
2.36148.1	0
2.36149.1	0
3.36150.1	0
3.36151.1	0
4.36152.1	0
4.36153.1	0
5.36154.1	0
5.36155.1	0
6.36156.1	0
6.36157.1	0
7.36158.1	0
7.36159.1	0
8.36160.1	0
8.36161.1	0
9.36162.1	0
9.36163.1	0
10.36164.1	0
10.36165.1	0
11.36166.1	0
11.36167.1	0
12.36168.1	0
12.36169.1	0
13.36170.1	0
13.36171.1	0
14.36172.1	0
14.36173.1	0
15.36174.1	0

17.301771
18.601801
18.501811
19.001821
19.301831
20.801841
20.301851
21.001861
21.301871
22.501881
22.301891
23.001901
23.301911
0. 1921
0.501931
1.001941
1.501951
2.001961
2.501971
3.001981
3.501991
4.002001

STATION 1. PLAN 1. RATIO 2
END-OF-PERIOD HYDROGRAPH ORDINATES

NAME	AGE	SEX	STATE	DEATH DATE
WILLIAM	1494.0	M	ILLINOIS	1494.0
WILLIAM	1494.0	M	ILLINOIS	1494.0
WILLIAM	1494.0	M	ILLINOIS	1494.0
WILLIAM	1494.0	M	ILLINOIS	1494.0

1497.7	1497.4	1497.2	1497.0	1496.8	1496.6	1496.4	1496.3	1496.1	1496.0
1495.9	1495.8	1495.7	1495.6	1495.5	1495.4	1495.3	1495.2	1495.1	1495.0
1495.1	1495.0	1495.0	1494.9	1494.9	1494.8	1494.8	1494.7	1494.7	1494.7
1494.6	1494.6	1494.6	1494.5	1494.5	1494.5	1494.4	1494.4	1494.4	1494.4
1494.3	1494.3	1494.3	1494.3	1494.3	1494.2	1494.2	1494.2	1494.2	1494.2
1494.2	1494.2	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1
1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.0	1494.0	1494.0	1494.0
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0

PEAK OUTFLOW IS 2253. AT TIME 93.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2253.	1621.	660.	234.	33705.
CPS	64.	46.	19.	7.	951.
INCHES		4.54	8.05	8.56	8.57
MM		125.56	204.58	217.34	217.59
AC-FT		804.	1310.	1391.	1393.
THOUS CU M		951.	1615.	1716.	1716.

0.00F.

STATION 1

INFLOW(1), CUTFLOW(0) AND OBSERVED FLOW(2)

1200. 800. 400. 0.

2000. 1600. 1200. 800. 400. 0.

0.30	11	0.
1.00	21	0.
1.30	31	0.
2.00	41	0.
2.30	51	0.
3.00	61	0.
3.30	71	0.
4.00	81	0.
4.30	91	0.
5.00	101	0.
5.30	111	0.
6.00	121	0.
6.30	131	0.
7.00	141	0.
7.30	151	0.
8.00	161	0.
8.30	171	0.
9.00	181	0.
9.30	191	0.
10.00	201	0.
10.30	211	0.
11.00	221	0.
11.30	231	0.
12.00	241	0.
12.30	251	0.
13.00	261	0.
13.30	271	0.
14.00	281	0.
14.30	291	0.
15.00	301	0.
15.30	311	0.
16.00	321	0.
16.30	331	0.
17.00	341	0.
17.30	351	0.
18.00	3601	0.
18.30	3701	0.
19.00	3801	0.
19.30	3901	0.
20.00	4001	0.
20.30	4101	0.
21.00	4201	0.
21.30	4301	0.
22.00	441	0.
22.30	451	0.
23.00	461	0.
23.30	471	0.
24.00	481	0.
24.30	491	0.
25.00	501	0.
25.30	511	0.
26.00	521	0.
26.30	531	0.
27.00	541	0.

11.00118.10	0
11.30119.10	
12.00120.10	
12.30121.10	
13.30122.10	
13.30123.10	
14.00124.10	
14.30125.10	
15.00126.10	
15.30127.1	
16.00128.10	
16.30129.10	
17.00130.10	
17.30131.10	
18.00132.10	
18.30133.10	
19.00134.10	
19.30135.10	
20.00136.10	
20.30137.10	
21.00138.10	
21.30139.10	
22.00140.10	
22.30141.10	
23.00142.10	
23.30143.10	
0. 1441	
0.301451	
1.001461	
1.301471	
2.001481	
2.301491	
3.001501	
3.301511	
4.001521	
4.301531	
5.001541	
5.301551	
6.001561	
6.301571	
7.001581	
7.301591	
8.001601	
8.301611	
9.001621	
11.301631	
12.301641	
12.301651	
13.001661	
13.301671	
14.301681	
14.301691	
15.001701	
15.301711	
16.001721	
16.301731	
17.001741	
17.301751	
18.001761	
18.301771	
19.001781	
19.301791	
20.001801	
20.301811	
21.001821	
21.301831	
22.001841	
22.301851	
23.001861	
23.301871	
24.001881	
24.301891	
25.001901	
25.301911	
26.001921	
26.301931	
27.001941	
27.301951	
28.001961	
28.301971	
29.001981	
29.301991	
30.002001	
30.302011	
31.002021	
31.302031	
32.002041	
32.302051	
33.002061	
33.302071	
34.002081	
34.302091	
35.002101	
35.302111	
36.002121	
36.302131	
37.002141	
37.302151	
38.002161	
38.302171	
39.002181	
39.302191	
40.002201	
40.302211	
41.002221	
41.302231	
42.002241	
42.302251	
43.002261	
43.302271	
44.002281	
44.302291	
45.002301	
45.302311	
46.002321	
46.302331	
47.002341	
47.302351	
48.002361	
48.302371	
49.002381	
49.302391	
50.002401	
50.302411	
51.002421	
51.302431	
52.002441	
52.302451	
53.002461	
53.302471	
54.002481	
54.302491	
55.002501	
55.302511	
56.002521	
56.302531	
57.002541	
57.302551	
58.002561	
58.302571	
59.002581	
59.302591	
60.002601	
60.302611	
61.002621	
61.302631	
62.002641	
62.302651	
63.002661	
63.302671	
64.002681	
64.302691	
65.002701	
65.302711	
66.002721	
66.302731	
67.002741	
67.302751	
68.002761	
68.302771	
69.002781	
69.302791	
70.002801	
70.302811	
71.002821	
71.302831	
72.002841	
72.302851	
73.002861	
73.302871	
74.002881	
74.302891	
75.002901	
75.302911	
76.002921	
76.302931	
77.002941	
77.302951	
78.002961	
78.302971	
79.002981	
79.302991	
80.003001	
80.303011	
81.003021	
81.303031	
82.003041	
82.303051	
83.003061	
83.303071	
84.003081	
84.303091	
85.003101	
85.303111	
86.003121	
86.303131	
87.003141	
87.303151	
88.003161	
88.303171	
89.003181	
89.303191	
90.003201	
90.303211	
91.003221	
91.303231	
92.003241	
92.303251	
93.003261	
93.303271	
94.003281	
94.303291	
95.003301	
95.303311	
96.003321	
96.303331	
97.003341	
97.303351	
98.003361	
98.303371	
99.003381	
99.303391	
100.003401	
100.303411	
101.003421	
101.303431	
102.003441	
102.303451	
103.003461	
103.303471	
104.003481	
104.303491	
105.003501	
105.303511	
106.003521	
106.303531	
107.003541	
107.303551	
108.003561	
108.303571	
109.003581	
109.303591	
110.003601	
110.303611	
111.003621	
111.303631	
112.003641	
112.303651	
113.003661	
113.303671	
114.003681	
114.303691	
115.003701	
115.303711	
116.003721	
116.303731	
117.003741	
117.303751	
118.003761	
118.303771	
119.003781	
119.303791	
120.003801	
120.303811	
121.003821	
121.303831	
122.003841	
122.303851	
123.003861	
123.303871	
124.003881	
124.303891	
125.003901	
125.303911	
126.003921	
126.303931	
127.003941	
127.303951	
128.003961	
128.303971	
129.003981	
129.303991	
130.004001	
130.304011	
131.004021	
131.304031	
132.004041	
132.304051	
133.004061	
133.304071	
134.004081	
134.304091	
135.004101	
135.304111	
136.004121	
136.304131	
137.004141	
137.304151	
138.004161	
138.304171	
139.004181	
139.304191	
140.004201	
140.304211	
141.004221	
141.304231	
142.004241	
142.304251	
143.004261	
143.304271	
144.004281	
144.304291	
145.004301	
145.304311	
146.004321	
146.304331	
147.004341	
147.304351	
148.004361	
148.304371	
149.004381	
149.304391	
150.004401	
150.304411	
151.004421	
151.304431	
152.004441	
152.304451	
153.004461	
153.304471	
154.004481	
154.304491	
155.004501	
155.304511	
156.004521	
156.304531	
157.004541	
157.304551	
158.004561	
158.304571	
159.004581	
159.304591	
160.004601	
160.304611	
161.004621	
161.304631	
162.004641	
162.304651	
163.004661	
163.304671	
164.004681	
164.304691	
165.004701	
165.304711	
166.004721	
166.304731	
167.004741	
167.304751	
168.004761	
168.304771	
169.004781	
169.304791	
170.004801	
170.304811	
171.004821	
171.304831	
172.004841	
172.304851	
173.004861	
173.304871	
174.004881	
174.304891	
175.004901	
175.304911	
176.004921	
176.304931	
177.004941	
177.304951	
178.004961	
178.304971	
179.004981	
179.304991	
180.005001	
180.305011	
181.005021	
181.305031	
182.005041	
182.305051	
183.005061	
183.305071	
184.005081	
184.305091	
185.005101	
185.305111	
186.005121	
186.305131	
187.005141	
187.305151	
188.005161	
188.305171	
189.005181	
189.305191	
190.005201	
190.305211	
191.005221	
191.305231	
192.005241	
192.305251	
193.005261	
193.305271	
194.005281	
194.305291	
195.005301	
195.305311	
196.005321	
196.305331	
197.005341	
197.305351	
198.005361	
198.305371	
199.005381	
199.305391	
200.005401	
200.305411	
201.005421	
201.305431	
202.005441	
202.305451	
203.005461	
203.305471	
204.005481	
204.305491	
205.005501	
205.305511	
206.005521	
206.305531	
207.005541	
207.305551	
208.005561	
208.305571	
209.005581	
209.305591	
210.005601	
210.305611	
211.005621	
211.305631	
212.005641	
212.305651	
213.005661	
213.305671	
214.005681	
214.305691	
215.005701	
215.305711	
216.005721	
216.305731	
217.005741	
217.305751	
218.005761	
218.305771	
219.005781	
219.305791	
220.005801	
220.305811	
221.005821	
221.305831	
222.005841	
222.305851	
223.005861	
223.305871	
224.005881	
224.305891	
225.005901	
225.305911	
226.005921	
226.305931	
227.005941	
227.305951	
228.005961	
228.305971	
229.005981	
229.305991	
230.006001	
230.306011	
231.006021	
231.306031	
232.006041	
232.306051	
233.006061	
233.306071	
234.006081	
234.306091	
235.006101	
235.306111	
236.006121	
236.306131	
237.006141	
237.306151	
238.006161	

17.3017.1	
18.001801	
18.301811	
19.001821	
19.301831	
20.001841	
20.301851	
21.001861	
21.301871	
22.001881	
22.301891	
23.001901	
23.301911	
0. 1521	
0.301931	
1.001941	
1.301951	
2.001961	
2.301971	
3.001981	
3.301991	
4.002001	

**STATION 1, PLAN 1, PLATE 3
END-OF-PERIOD HYDROGRAPH ORIGINATES**

PEAK GULFLCO IS	28860. AT TIME 43.00 HOURS	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
		CFS	2860.	827.	292.	42131.
		CPS	81.	59.	23.	1193.
		INCHES		6.37	10.09	10.71
		MM		161.89	256.35	271.68
		AC-FT		1036.	1631.	1739.
		THOUS CU M		1278.	2024.	2145.

•0 VF•

STATION 1

INFLUX (L), CUFFLE (G) AND OBSERVED FLOW (L)

1200. 1600. 2000. 2400. 2800. 3200.

0.0	11					
0.3	21					
1.0	31					
1.3	31					
2.0	91					
2.3	51					
3.0	61					
3.3	71					
4.0	81					
4.3	91					
5.0	101					
5.3	111					
6.0	121					
6.3	131					
7.0	141					
7.3	151					
8.0	161					
8.3	171					
9.0	181					
9.3	191					
10.0	201					
10.3	211					
11.0	221					
11.3	231					
12.0	241					
12.3	251					
13.0	261					
13.3	271					
14.0	281					
14.3	291					
15.0	301					
15.3	311					
16.0	321					
16.3	331					
17.0	341					
17.3	351					
18.0	361					
18.3	371					
19.0	381					
19.3	391					
20.0	401					
20.3	411					
21.0	421					
21.3	431					
22.0	441					
22.3	451					
23.0	461					
23.3	471					
24.0	481					
24.3	491					
25.0	501					
25.3	511					
26.0	521					
26.3	531					

11.00118.10	11.10119.10	12.00120.10	12.30121.0	13.00122.10	13.30123.10	14.00124.10	14.30125.10	15.00126.10	15.30127.10	16.00128.10	16.30129.10	17.00130.10	17.30131.0	18.00132.0	18.30133.0	19.00134.0	19.30135.0	20.00136.0	20.30137.0	21.00138.0	21.30139.0	22.00140.0	22.30141.0	23.00142.0	23.30143.0	24.00144.0	24.30145.0	1.00146.0	1.30147.0	2.00148.0	2.30149.0	3.00150.0	3.30151.0	4.00152.0	4.30153.0	5.00154.0	5.30155.0	6.00156.0	6.30157.0	7.00158.0	7.30159.0	8.00160.0	8.30161.0	9.00162.0	9.30163.0	10.00164.0	10.30165.0	11.00166.0	11.30167.0	12.00168.0	12.30169.0	13.00170.0	13.30171.0	14.00172.0	14.30173.0	15.00174.0	15.30175.0	16.00176.0
-------------	-------------	-------------	------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------

17.301791
18.001801
18.301811
19.001821
19.301831
20.001841
20.301851
21.001861
21.301871
22.001881
22.301891
23.001901
23.301911
0.0.1921
0.301931
1.0.01941
1.301951
2.0.01961
2.301971
3.0.01981
3.301991
4.0.02001

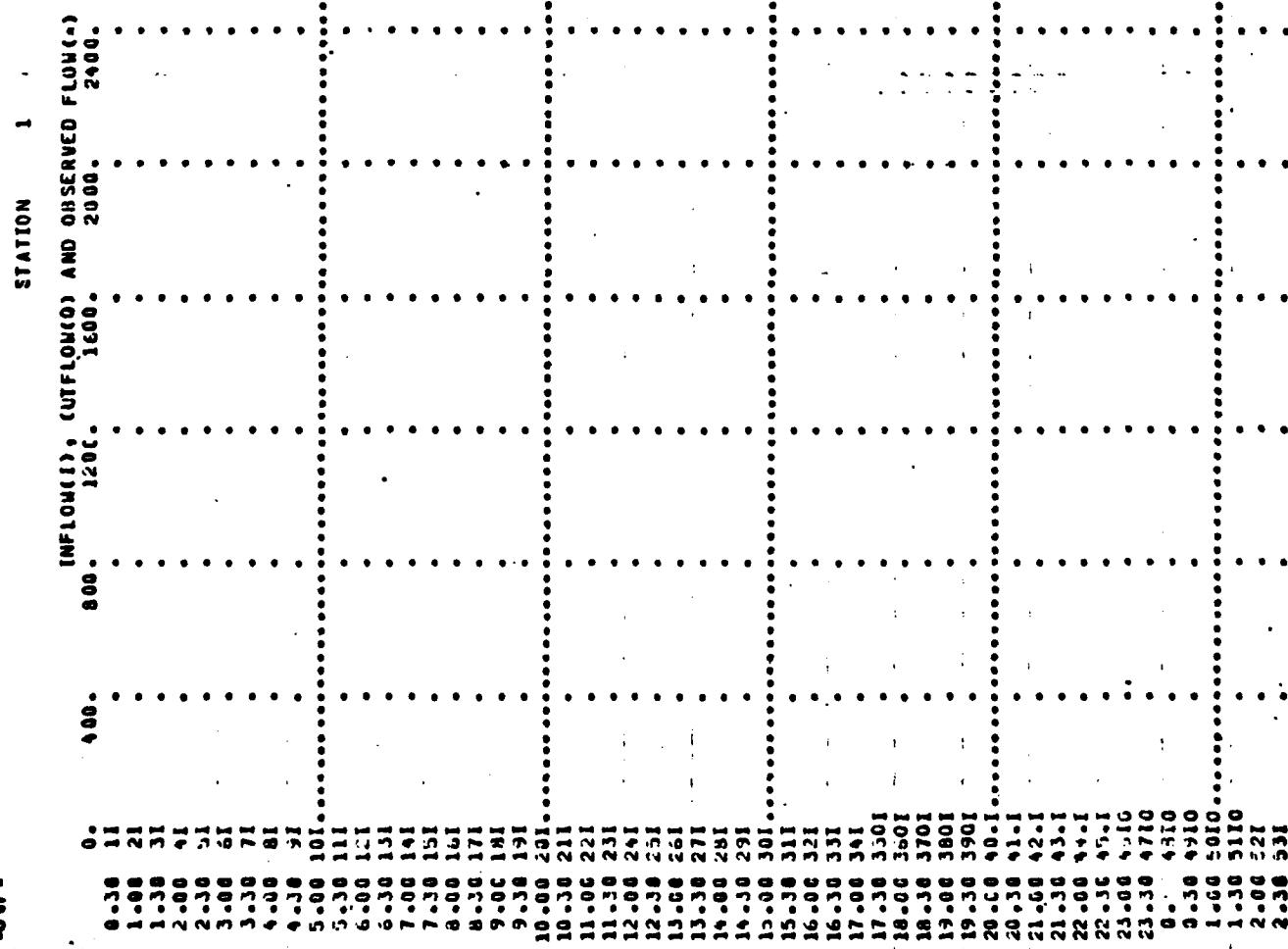
四

STATION 1, PLAN 1, RAPIC 4
END-OF-PERIOD HYDROGRAPH ORDINATE

1498.5	1498.2	1497.9	1497.6	1497.4	1497.2	1497.0	1496.8	1496.7	1496.5
1496.4	1496.2	1496.1	1496.0	1495.9	1495.8	1495.7	1495.6	1495.5	1495.4
1495.4	1495.3	1495.2	1495.2	1495.1	1495.0	1495.0	1495.0	1494.9	1494.5
1494.8	1494.8	1494.7	1494.7	1494.7	1494.6	1494.5	1494.5	1494.5	1494.5
1494.5	1494.4	1494.4	1494.4	1494.3	1494.3	1494.3	1494.3	1494.3	1494.2
1494.2	1494.2	1494.2	1494.2	1494.2	1494.2	1494.1	1494.1	1494.1	1494.1
1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0

PEAK OUTFLOW IS 3440. AT TIME 93.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	240.	2563.	998.	351.	50557.
CFS	97.	73.	28.	10.	1432.
INCHES		7.82	12.13	12.94	12.95
MM		150.57	308.09	326.02	326.38
AC-FT		1271.	1972.	2087.	2089.
THOUS CUB FT		3558.	2433.	2574.	2577.



4.30 571	5.00 581	5.30 591	6.00 601...	6.30 611	7.00 6201	7.30 6301	8.00 6401	8.30 65.01	9.00 66.0 1	9.30 67.0 1	10.00 68.0 1	10.30 69.0 1	11.00 70.0 1	11.30 71.0 1	12.00 72.0 1	12.30 73.0 1	13.00 74.0 1	13.30 75.0 1	14.00 76.0 1	14.30 77.0 1	15.00 78.0 1	15.30 77.0 1	16.00 80.0 1	16.30 81.0 1	17.00 82.0 1	17.30 83.0 1	18.00 84.0 1	18.30 85.0 1	19.00 86.0 1	19.30 87.0 1	20.00 88.0 1	20.30 89.0 1	21.00 90.0 1	21.30 91.0 1	22.00 92.0 1	22.30 93.0 1	23.00 94.0 1	23.30 95.0 1	24.00 96.0 1	24.30 97.0 1	1.00 98.0	1.30 99.0	2.00 100.0	2.30 101.0	3.00 102.0	3.30 103.0	4.00 104.0	4.30 105.0	5.00 106.0	5.30 107.0	6.00 108.0	6.30 109.0	7.00 110.0	7.30 111.0	8.00 112.0	8.30 113.0	9.00 114.0	9.30 115.0	10.00 116.0
----------	----------	----------	-------------	----------	-----------	-----------	-----------	------------	-------------	-------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	-----------	-----------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	-------------

11.06119. 10
11.36114. 10
12.06120..10..
12.36121.1 0
13.06122.1 0
13.36123.1 0
14.06124.10
14.36125.10
15.06126.10
15.36127.10
16.06128.10
16.36129.10
17.06130.10..
17.36131.1
18.06132.1
18.36133.10
19.06134.10
19.36135.10
20.06136.10
20.36137.10
21.06138.10
21.36139.10
22.06140.10..
22.36141.10
23.06142.10
23.36143.10
0. 14410
0.36145.10
1.00044.10
1.36147.10
2.00048.10
2.36149.1
3.06150.1...
3.36151.1
4.00052.1
4.36153.1
5.00054.1
5.36155.1
6.00056.1
6.36157.1
7.00058.1
7.36159.1
8.00060.1...
8.36161.1
9.00062.1
9.36163.1
10.00064.1
10.36165.1
11.00066.1
11.36167.1
12.00068.1
12.36169.1
13.00070.1...
13.36171.1
14.00072.1
14.36173.1
15.00074.1
15.36175.1

17-361771
18-001601
18-35811
19-001871
19-35031
20-000841
20-351851
21-001821
21-351871
22-001881
22-351891
23-001801
23-351811
0-1521
0-300931
1-001941
1-301571
2-001561
2-361571
3-001981
3-301571
4-002001

STATION 1. PLAN 1, PATRIC 5
END-OF-PERIOD HYDROGRAPH ORDINATES

TIME	OUTFLOW										STORAGE										STAGE																																																																															
0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.	49.	50.	51.	52.	53.	54.	55.	56.	57.	58.	59.	60.	61.	62.	63.	64.	65.	66.	67.	68.	69.	70.	71.	72.	73.	74.	75.	76.	77.	78.	79.	80.	81.	82.	83.	84.	85.	86.	87.	88.	89.	90.	91.	92.	93.	94.	95.	96.	97.	98.	99.	100.
1.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.	49.	50.	51.	52.	53.	54.	55.	56.	57.	58.	59.	60.	61.	62.	63.	64.	65.	66.	67.	68.	69.	70.	71.	72.	73.	74.	75.	76.	77.	78.	79.	80.	81.	82.	83.	84.	85.	86.	87.	88.	89.	90.	91.	92.	93.	94.	95.	96.	97.	98.	99.	100.
2.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.	49.	50.	51.	52.	53.	54.	55.	56.	57.	58.	59.	60.	61.	62.	63.	64.	65.	66.	67.	68.	69.	70.	71.	72.	73.	74.	75.	76.	77.	78.	79.	80.	81.	82.	83.	84.	85.	86.	87.	88.	89.	90.	91.	92.	93.	94.	95.	96.	97.	98.	99.	100.
3.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.	49.	50.	51.	52.	53.	54.	55.	56.	57.	58.	59.	60.	61.	62.	63.	64.	65.	66.	67.	68.	69.	70.	71.	72.	73.	74.	75.	76.	77.	78.	79.	80.	81.	82.	83.	84.	85.	86.	87.	88.	89.	90.	91.	92.	93.	94.	9					

1499.0	1498.7	1498.4	1498.2	1497.9	1497.7	1497.5	1497.3	1497.1	1496.9
1496.8	1496.5	1496.5	1496.3	1496.2	1496.1	1496.0	1495.9	1495.8	1495.7
1495.6	1495.5	1495.4	1495.4	1495.3	1495.2	1495.2	1495.1	1495.0	1495.0
1495.0	1494.9	1494.9	1494.8	1494.8	1494.7	1494.7	1494.7	1494.6	1494.6
1494.5	1494.5	1494.5	1494.5	1494.4	1494.4	1494.4	1494.3	1494.3	1494.3
1494.3	1494.3	1494.2	1494.2	1494.2	1494.2	1494.2	1494.2	1494.2	1494.2
1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1
1494.1	1494.1	1494.1	1494.1	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0

PEAK OUTFLOW IS 4557. AT TIME 43.00 MCURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4597.	3450.	1328.	468.	67409.
CPS	130.	59.	38.	13.	1909.
INCHES					
PH	10.66	16.21	17.11	17.11	
AC-FT	270.73	411.61	434.76	435.17	
THOUS CU M	1733.	2635.	2782.	2786.	
	2138.	3250.	3432.	3436.	

•0VF.

STATION 1

INFLOW (1), CUTOFF (2) AND OBSERVED FLOW (3)

	0.	1000.	2000.	3000.	4000.	5000.	0.
6:30	11						
1:00	21						
1:30	31						
2:00	41						
2:30	51						
3:00	61						
3:30	71						
4:00	81						
4:30	91						
5:00	101						
5:30	111						
6:00	121						
6:30	131						
7:00	141						
7:30	151						
8:00	161						
8:30	171						
9:00	181						
9:30	191						
10:00	201						
10:30	211						
11:00	221						
11:30	231						
12:00	241						
12:30	251						
13:00	261						
13:30	271						
14:00	281						
14:30	291						
15:00	301						
15:30	311						
16:00	321						
16:30	331						
17:00	341						
17:30	351						
18:00	3601						
18:30	3701						
19:00	3801						
19:30	3901						
20:00	4001						
20:30	4101						
21:00	4201						
21:30	431						
22:00	441						
22:30	451						
23:00	461						
23:30	471						
24:00	481						
24:30	491						
25:00	501						
25:30	511						
26:00	521						
26:30	531						
27:00	541						
27:30	551						

4.3C 571	5.00 581	5.3C 591	6.00 601	6.30 611	7.00 621	7.3C 631	8.00 640	8.3C 650
9.00 660	9.30 670	9.60 680	10.00 690	10.3C 695	11.00 700	11.3C 710	12.0C 720	12.3C 730
12.6C 735	13.0C 740	13.3C 745	13.6C 750	13.9C 755	14.0C 760	14.3C 770	15.0C 780	15.3C 790
15.6C 795	15.9C 800	16.0C 800	16.3C 810	17.0C 820	17.3C 830	17.6C 840	18.0C 850	18.3C 855
19.0C 860	19.3C 865	19.6C 870	20.0C 880	20.3C 885	21.0C 890	21.3C 910	22.0C 920	22.3C 930
22.6C 940	23.0C 940	23.3C 940	23.6C 940	23.9C 940	24.0C 950	0. 950	0.3C 970	1.0C 980
1.3C 990	2.0C 1000	2.2C 1010	3.0C 1020	3.3C 1030	4.0C 1040	4.3C 1050	5.0C 1060	5.5C 1070
6.0C 1080	6.3C 1090	7.0C 1100	7.3C 1110	8.0C 1120	8.3C 1130	9.0C 1140	9.3C 1150	9.6C 1160

11.0	30119.10
11.0	30119.10
12.0	00120.10
12.0	30121.1
13.0	00122.1
13.0	30123.1
14.0	00124.1
14.0	30125.1
15.0	00126.10
15.0	30127.10
16.0	00128.10
16.0	30129.10
17.0	00130.10
17.0	30131.10
18.0	00132.10
18.0	30133.10
19.0	00134.10
19.0	30135.10
20.0	00136.10
20.0	30137.1
21.0	00138.1
21.0	30139.1
22.0	00140.1
22.0	30141.1
23.0	00142.1
23.0	30143.1
0.0	144.1
0.0	30145.1
1.0	00145.1
1.0	30147.1
2.0	00148.1
2.0	30149.1
3.0	00150.1
3.0	30151.1
4.0	00152.1
4.0	30153.1
5.0	00154.1
5.0	30155.1
6.0	00156.1
6.0	30157.1
7.0	00158.1
7.0	30159.1
8.0	00160.1
8.0	30161.1
9.0	00162.1
9.0	30163.1
10.0	00164.1
10.0	30165.1
11.0	00166.1
11.0	30167.1
12.0	00168.1
12.0	30169.1
13.0	00170.1
13.0	30171.1
14.0	00172.1
14.0	30173.1
15.0	00174.1
15.0	30175.1

17.JC1791
18..JC1801
18..JC1811
19..001821
19..JC1831
20..001841
20..JC1851
21..001861
21..JC1871
22..001881
22..JC1891
23..001901
23..JC1911
0.. 1921
0..JC1931
1..001941
1..JC1951
2..001961
2..JC1971
3..001981
3..JC1991
4..002001

STATION 1, PLAN 1, RATIO 6
END-3E-PERIOD HYDROGRAPH ORDINATE

1499.5	1499.2	1498.9	1498.6	1498.3	1498.1	1497.5	1497.7	1497.3
1497.1	1496.9	1496.8	1496.6	1496.5	1496.4	1496.2	1496.1	1496.5
1495.8	1495.7	1495.6	1495.5	1495.5	1495.4	1495.3	1495.2	1495.1
1495.1	1495.0	1495.0	1494.9	1494.9	1494.8	1494.8	1494.7	1494.7
1494.6	1494.6	1494.6	1494.5	1494.5	1494.5	1494.4	1494.4	1494.4
1494.3	1494.3	1494.3	1494.3	1494.3	1494.2	1494.2	1494.2	1494.2
1494.2	1494.2	1494.2	1494.1	1494.1	1494.1	1494.1	1494.1	1494.1
1494.1	1494.1	1494.1	1494.1	1494.1	1494.1	1494.0	1494.0	1494.0
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0
1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0	1494.0

PEAK OUTFLOW IS 5752. AT TIME 43.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5752.	4408.	1663.	585.	84262.
CPS	16.3.	1.25.	.47.	.17.	2386.
INCHES		13.44	20.29	21.39	21.42
MM		341.46	515.26	563.38	543.97
AC-FT		21.86.	3259.	3478.	3482.
THOUS CU M		26.96.	4068.	4250.	4295.

• 04

STATION

Q.	INFLOW (L), (OUTFLOW) AND OBSERVED FLOW (L)
1000.	2000. 2000. 4000. 5000. 6000.

• 111 •

4-30 571	5-08 581	5-30 531	6-00 601.
6-30 611	7-00 621	7-30 631	8-00 6401
8-30 6501	9-00 6601	9-30 670	10-00 680
10-30 690	11-00 700	11-30 710	12-00 720
12-30 730	13-00 740	13-30 750	14-00 760
14-30 770	15-00 780	15-30 790	16-00 800..
16-30 810	17-00 820	17-30 830	18-00 840
18-30 850	19-00 860	19-30 870	20-00 880
20-30 890..	21-00 901	21-30 910	22-00 920
22-30 930	23-00 940	23-30 950	24-00 960
24-30 970	25-00 980	25-30 990	26-00 100..
26-30 1010	27-00 1020	27-30 1030	28-00 1040
28-30 1050	29-00 1060	29-30 1070	30-00 1080
30-30 1090	31-00 1100..	31-30 1110	32-00 1120..
32-30 1130	33-00 1140	33-30 1150	34-00 1160..

11.0 0118.10	11.3 0119.10	12.0 0120.10	12.3 0121.10	12.5 0122.10	13.0 0123.10	13.3 0124.10	14.0 0125.1	14.3 0125.1	15.0 0125.1	15.3 0127.1	16.0 013210	16.3 013510	19.0 013510	19.3 013510	20.0 013510	20.3 013710	21.0 013810	21.3 013910	22.0 01431	22.3 01441	23.0 01421	23.3 01431	0.0 14.1	0.3 01451	1.0 01461	1.3 01471	2.0 01481	2.3 01491	3.0 01501	3.3 01511	4.0 01521	4.3 01531	5.0 01541	5.3 01551	6.0 01561	6.3 01571	7.0 01581	7.3 01591	8.0 01601	10.0 01631	11.0 01661	13.0 01701	13.3 01711	14.0 01721	14.3 01731	15.0 01741	15.3 01751
--------------	--------------	--------------	--------------	--------------	--------------	--------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	------------	------------	------------	------------	----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	------------	------------	------------	------------	------------	------------	------------	------------

17. J01791
18. 061801...
18. 301811
19. 001821
19. 361831
20. 061841
20. 361851
21. 001861
21. 361871
22. 061881
22. 361891
23. 001901...
23. 361911
0. 1921
0. 301931
1. 001941
1. 301951
2. 001961
2. 301971
3. 001981
3. 301991
4. 002001...

PEAK FLOW AND STORAGE (READ OF PERIOD) SUMMARY FORMULATED PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
 AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS					
				RATIO 1 0.20	RATIO 2 0.40	RATIO 3 0.50	RATIO 4 0.60	RATIO 5 0.80	RATIO 6 1.00
HYDROGRAPH AT	1 3.05 (14996.77)	1	1150.	2255.	2874.	3449.	4599.	5748.	
ROUTE TO	1 3.05 (14996.77)	1	886.	2259.	2860.	3440.	4597.	5752.	

36 DATE 07-27-81 TIME 11:288 10 : AJ NYSQGS

APPENDIX D

REFERENCES

APPENDIX D

REFERENCES

- 1) U.S. Department of Commerce, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, May 1961,
- 2) U.S. Department of Commerce, Hydrometeorological Report No. 33, Seasonal Variation of the Probable Maximum Precipitation East of the 105th Meridian for Areas from 10 to 1,000 Square Miles and Durations of 6, 12, 24, and 48 Hours; April 1956.
- 3) Soil Conservation Service, National Engineering Handbook, Section 4, Hydrology, August 1972 (U.S. Department of Agriculture),
- 4) H.W. King and E.F. Brater, Handbook of Hydraulics, 5th edition, McGraw-Hill, 1963.
- 5) T.W. Lambe and R.V. Whitman, Soil Mechanics, John Wiley and Sons, 1965.
- 6) W.D. Thornbury, Principles of Geomorphology, John Wiley and Sons, 1969.
- 7) University of the State of New York, Geology of New York, Education Leaflet 20, Reprinted 1973.
- 8) Cornell University Agriculture Experiment Station (compiled by M.G. Cline and R.L. Marshall), General Soil Map of New York State and Soils of New York Landscapes, Information Bulletin 119, 1977.

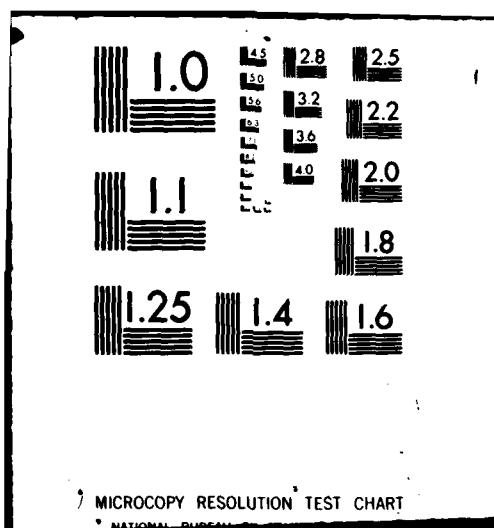
AD-A109 897 NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/6 13/13
NATIONAL DAM SAFETY PROGRAM. WILLIAM H. LUEHMANN RECREATION PON--ETC(U)
SEP 81 6 KOCH DACW51-79-C-0001

UNCLASSIFIED

242

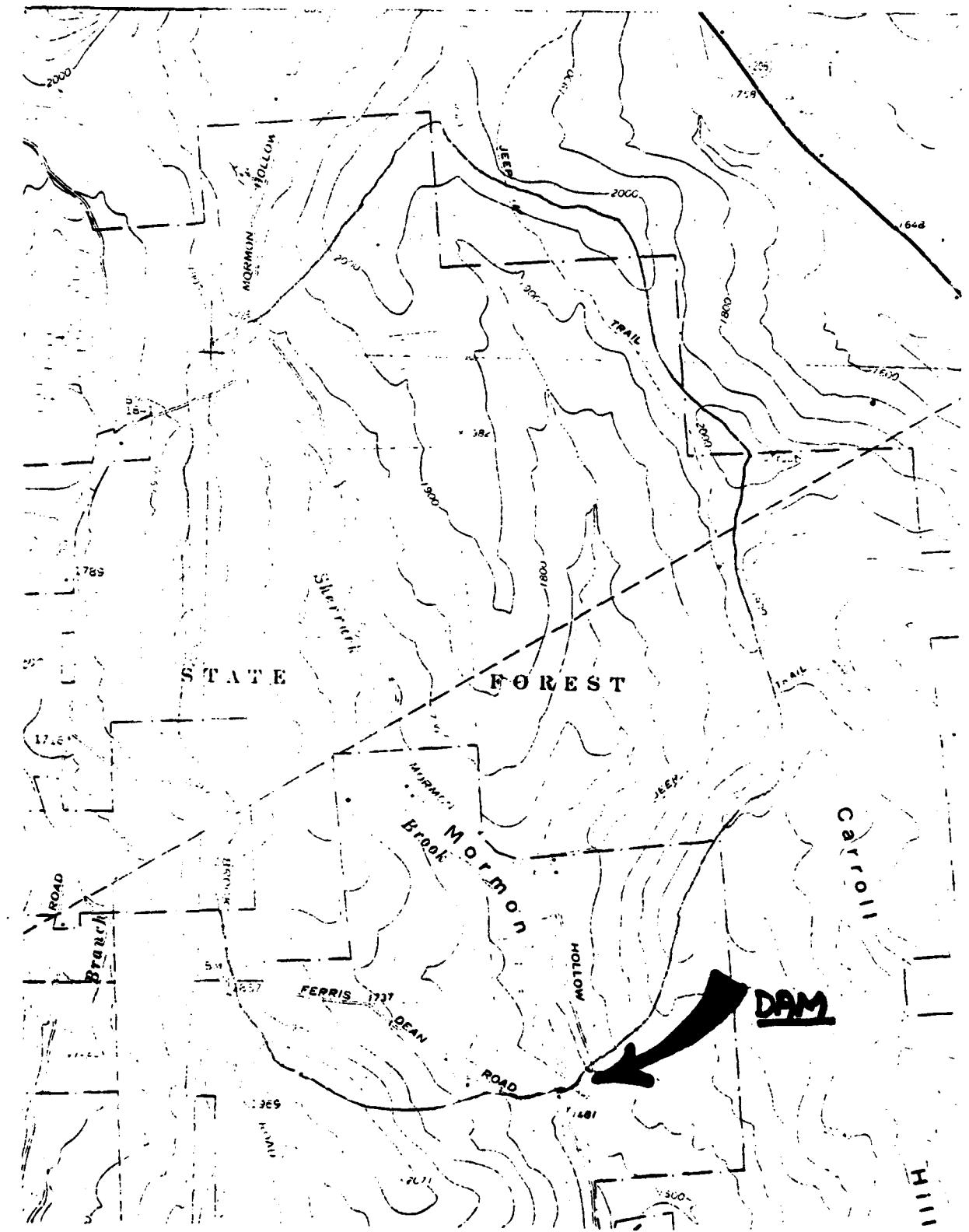
2000-2001

END
DATE
FILED
P-82
DTIC

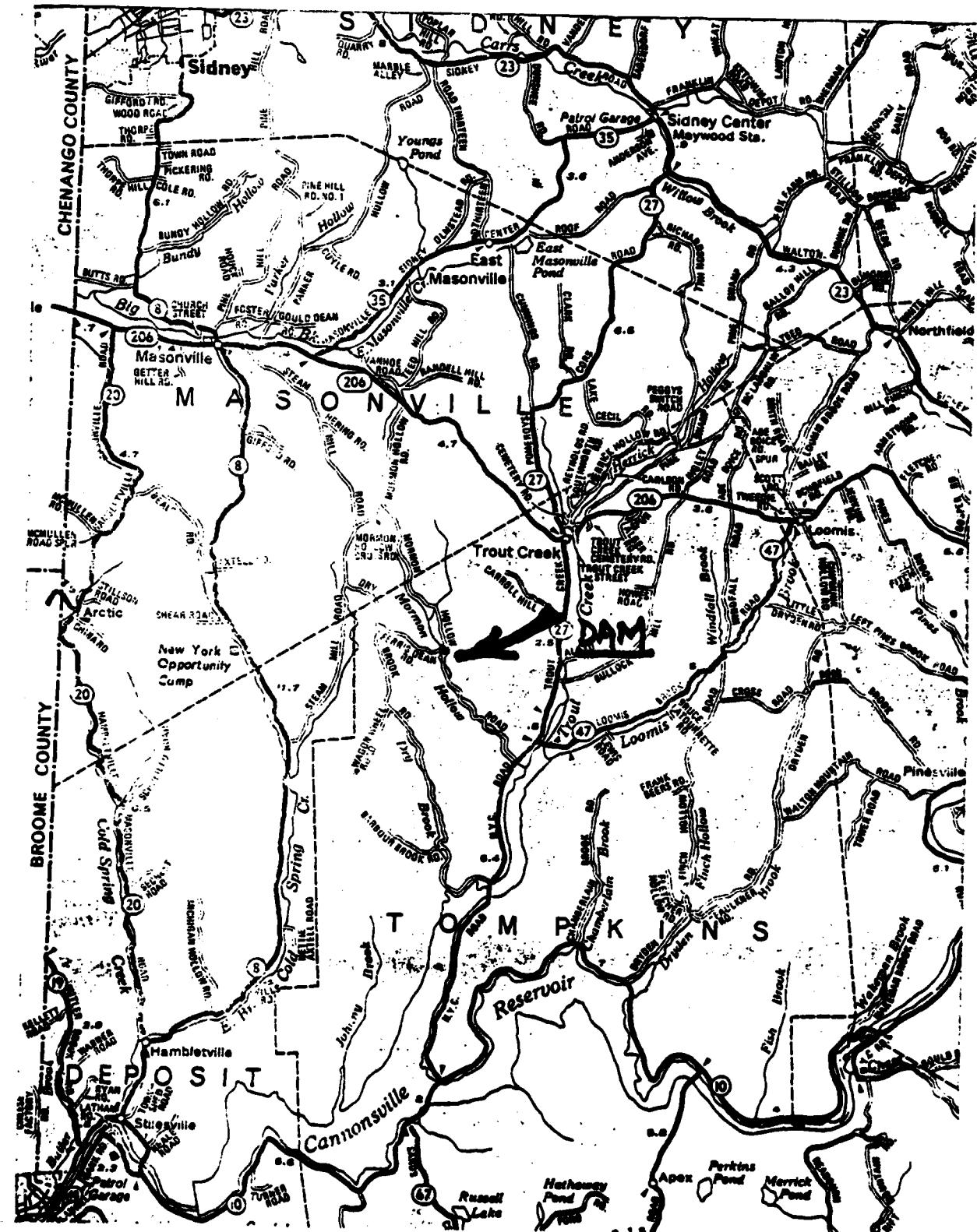


APPENDIX E

DRAWINGS



TOPOGRAPHIC MAP



VICINITY MAP